Start-up growth strategy

A case study of Ecobloom

ECOBLOOM

GROW SMARTER

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Master thesis Strategic Product Design
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Start-up growth strategy | A case study of Ecobloom

Graduation Thesis
Msc Strategic Product Design
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Preface |

During the first semester of the academic year 2016/2017 I met Hamza Qadoumi, an exchange student from KTH, Stockholm. Both our interest in entrepreneurship, engineering, design and strategy created a strong bond. Hamza's love for aquaponics and vision of making the world a more sustainable place resonated with me. Together with Juan Blasco, a Spanish exchange student, we decided to design a product together that made use of the ancient farming method aquaponics.

After a period of research, development and engineering, the time had come to strategize the market introduction and think about scaling-up the product and organization. Fortunately, this is exactly what the master SPD taught me and where my greatest passion lies. Therefore, I started to create a graduation assignment that could combine running the start-up and writing the thesis in alignment with Hamza. Shortly after, the ticket to Stockholm was booked and the adventure began.

One of the main reasons for me to start this journey was to experience how far three dedicated friends could make it with a start-up and their vision. The learning curve has been so steep that we feel much more comfortable to repeat the entire process and launch new innovations on the market. It has been an enjoyable rollercoaster and I have to thank many people for being part of it.

First of all, I want to thank Hamza and Juan for the exciting and often hard times running a business. Without you guys Ecobloom would not exist. Also many thanks to Alvaro, Nathan and Emese who later joined the team to make the first innovation a reality.

I would like to thank my supervisory team, Ruud and Christine, for always being able to provide valuable feedback anytime I needed it. The constructive criticism worked well for me and the output of every session sharpened my focus. I'm very grateful that it worked out well remotely and that everything could be effectively communicated over Skype.

Thanks to RedBull for partnering up with us and providing the best office/workspace at Epicenter Stockholm, including unlimited coffee and RedBull.

Thanks to friends and family, who came to visit me during my stay in Stockholm and got my mind off Ecobloom for a few days.

I'm excited to present my master thesis to you!
Enjoy reading!

Emil Jansen

Abstract

This master thesis is written for the master program Strategic Product Design in collaboration with Ecobloom and its members. The main objective was to create a holistic and strategic framework for start-ups to rapidly scale-up, while utilizing Ecobloom as a case study for implementation and evaluation.

Ecobloom is a start-up that focuses on empowering people to grow their own fresh and organic food in a fun, interactive and sustainable way. The proposition that Ecobloom currently develops and will start offering in the near future is often categorized in different ways by various consumer segments. The main cause of this effect is the hybrid characteristic of the product which means it exists out of multiple categories of products. More specifically, it combines an aquarium and indoor garden, also known as aquaponics. Many potential consumers are unfamiliar with the product category which poses challenges, but simultaneously great opportunities. One of the strengths of the thesis' framework is that it aims to optimize the innovation adoption for ambiguously categorized (hybrid) products. The development of the product was already done for 60% when starting the thesis.

Scaling up a start-up is considered a complex and dynamic phenomenon. To create a comprehensive, yet manageable framework, an important distinction between scaling on an abstract and more concrete dimension has been made. Firstly, a start-up grows as an organization, thereby developing its 'back-end'. Simultaneously, the 'front-end' is considered the actual proposition a start-up offers the market. This thesis takes both dimensions into account and combines the rather abstract and more concrete aspects of scaling to support start-ups to grow fast. During the development of both these frameworks, product development, Kickstarter preparation and other parallel processes were performed for Ecobloom. Interaction effects between these processes are highlighted to enrich the thesis further with valuable insights.

The concrete layer of the thesis takes into account consumer behavior models, attitude formation and its influence on behavior and categorization theory to optimize the innovation adoption by customizing the communicated product positioning per consumer segment. In other words, the (digital) marketing efforts are specifically tailored to the segments' desired benefits and values of the product.

A hybrid model where on- and offline marketing strategies are combined paves the way to reach innovators, early adopters and the early majority. Furthermore, the framework guides start-ups through the iterative method of online proposition validation and provides guidelines on how to scale geographically in a rational and validated manner, thereby decreasing risks and enhancing the chance of success at the moment of market introduction.

The abstract, organizational layer of the framework aims to support start-ups both short- and long-term. Therefore, it first presents a long-term focused framework which reflects adaptability and flexibility. Its future oriented characteristic with continuous exploration prepares start-ups to create and develop new innovations that strategically fit future landscapes, while exploiting current knowledge and businesses. This ambidextrous balance is crucial for start-ups to succeed on the long-term. The second organizational framework demonstrates 12 crucial elements that have been implemented by Ecobloom to succeed on the short-term and bring the first product to market. It is designed to thrive in an entrepreneurial and dynamic context.

The pragmatic and hands-on action research approach and implementation of the frameworks with Ecobloom as case study start-up has lead to valuable enhancements. Furthermore, it provides examples of how certain abstract recommendations are used by Ecobloom and what benefits it presents. Unfortunately, the actual market introduction and Kickstarter campaign of Ecobloom's first product have not been included in the thesis, because the preparations are still ongoing.

Reading guide

Throughout the thesis, sections with important insights and case study learnings are communicated within areas with a striped and colored background as shown below.

Important insights

Important insights at the end of each section are displayed within a field of green stripes and a light bulb next to it. These sections refer back to the original research objectives and explain its contribution. Furthermore, these conclusions and insights formed the foundation for the ideation phase and development of the frameworks.

Case study learnings

Running the start-up brought very rich learnings along with it that are directly linked to start-up growth. These case study specific insights relating to the thesis' objectives are addressed with the logo of Ecobloom next to it and written in a striped, blue field.

0 | Content

1 | Introduction

This thesis is written as master graduation assignment for Strategic Product Design of the faculty Industrial Design Engineering at the Delft University of Technology. The scope of the thesis is twofold. First, it aims to provide a valuable framework for start-ups to scale-up rapidly and guide them through the complex process of growth. Second, by conducting a case study of Ecobloom, knowledge was collected, integrated and (in) validated, thereby establishing growth for Ecobloom. The case study provides many insights and important lessons learned, creating relevant and new knowledge to both the research and entrepreneurial world.

Start-ups generally work agile and can react fast to its environment, therefore enormous growth is reachable in short time spans. However, entrepreneurship and start-up growth are dynamic and complex phenomena which are hard to grasp. Existing literature is lacking an integrated framework for start-ups to rapidly scale-up and utilize the window of opportunity to its fullest potential. This thesis sheds light on methods and approaches for start-ups to implement with the purpose of rapid and sustained growth.

The process of scaling-up Ecobloom combines an academic and entrepreneurial approach and embodies a holistic view. The concrete component comes from case study activities, which are deepened with literature and interviews on the academic side. The resulting framework integrates both, as shown in figure 1.

The report starts with a brief introduction about Ecobloom and its status at the beginning of writing the thesis. Hereafter, the scope of the project is established; thereby shaping the problem, defining the objectives and outcomes, explaining the approach, methodologies and relevancy of the project. The third chapter presents research in the form of an extensive literature study, combined with expert interviews. Next, the actual frameworks are developed and introduced. An important distinction is made between growth on an organizational and proposition level. Chapter six implements, evaluates and enhances the frameworks. The final chapter concludes, discusses and provides recommendations and limitations.

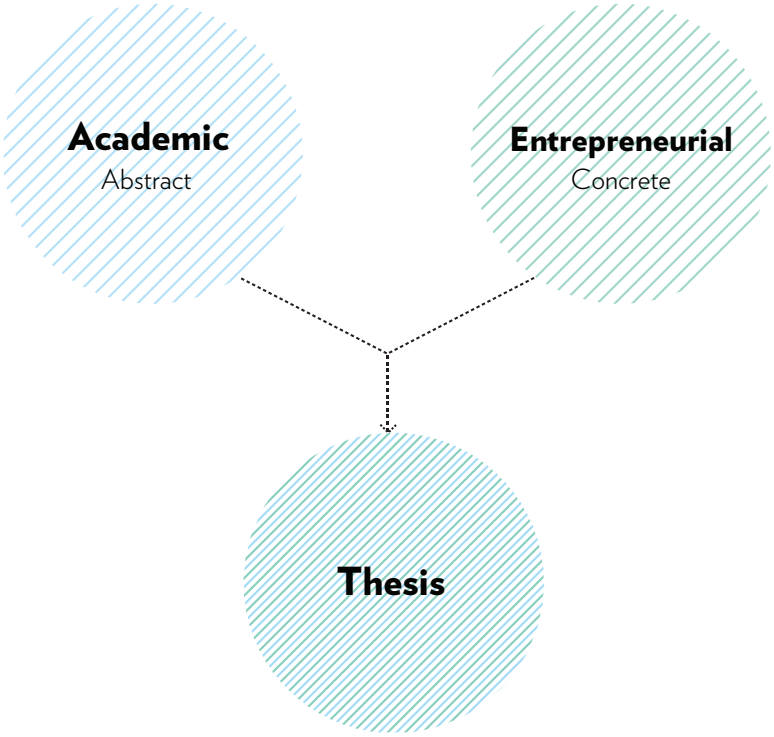


Figure 1: Combining an academic and entrepreneurial approach

1.1 | Ecobloom

Ecobloom is a high-tech sustainability start-up consisting of three co-founders/master students. Our mission is to empower people to grow healthy, organic food more locally. We envision a future where people grow their own food in a smart and interactive way, completely sustainable! Thereby not only bringing nature into our homes, but also educating people about the process while making it fun. The potential of combining technology and nature to create huge impact is something we truly stand for. We aspire to make this world a more sustainable place for future generations.

The EcoGarden

To establish this ambitious vision, the EcoGarden is being developed as first innovation. The EcoGarden is a smart miniature greenhouse and a self-sustaining aquarium, it is based on an ancient growing technique 'aquaponics' which has been transformed into a smart and modern product (figure 2). Aquaponics combines the raising of fish and cultivating of plants in water in a symbiotic environment. The appeal of aquaponics as a growing method is that it utilizes the fish waste as a nutrient source for the plants, while the plants naturally filter the water which is recirculated back to the fish, creating the ultimate self-sustaining ecosystem.

The EcoGarden is smart in a sense that it monitors relevant variables (e.g. water temperature, light intensity, humidity) continuously and automatically acts upon it. These variables are shown in a mobile application for optimal ease and comfort and it enables the user to learn about sustainable farming. Ecobloom empowers people to grow food more locally, all year round. Smart, educational and stylish are the main strategic pillars the start-up relies upon. The EcoGarden and its characteristics perfectly build upon these foundational strategic pillars.

Relevance of the start-up

According to predictions of the Food and Agriculture Organization of the United Nations (FAO), the food production needs to increase by 70% to feed 9B worldwide by 2050. This enormously increased capacity needs to be managed with finite arable land and dwindling resources (Kopf, 2017). Furthermore, the food security is threatened by unpredictable weather and the effects of climate change. Indoor farming is an efficient way to protect greens against unpredictable weather, while at the same time reducing resources that are needed and producing more per square foot. These reasons cause the indoor farming industry to grow with an incredible pace (Kopf, 2017).

The purpose of the EcoGarden is to tap into the indoor farming industry, while establishing and building the brand Ecobloom. The journey of bringing a product to market is extremely valuable and a great learning experience. It enables us to develop and launch future innovations with an increased impact. Ultimately, to become a recognized and worldwide player in the market with a diverse product portfolio.

Figure 2: The EcoGarden and its features

Meet the team

Hamza Qadoumi

Mechanical Engineer

Visionary

Juan J. Blasco

Aerospace Engineer

Programming wizard

Emil Jansen

Strategic Design Engineer

Innovator

The team

At the start of the thesis, the team consisted of 3 master students (2 from TU Delft and 1 from KTH Stockholm). The skillsets within the team are diverse: Hamza has a mechanical engineering background with an innovation management master. Juan is from aerospace engineering and is in charge or the electronics and programming. My responsibility within the company is business and strategy. However, many tasks are product design and engineering related as well, because of my background in product development.

As a team we strengthen and amplify each others' capabilities and synergize to reach our maximum potential. The shared vision, mindset and attitude is what creates a strong bond. We consider the team the strongest asset we possess. During the graduation period, the team has been expanded by three new engineers, which will be touched upon later on in the report.

Initial traction

Shortly before kicking off the assignment, Ecobloom has won the RedBull basement start-up competition in Sweden out of 70 start-ups. From that moment on, Ecobloom is part of Google's Partner Network through Epicenter Stockholm, and supported by Red Bull. Also, KTH Innovation is a university based accelerator which supports and helps Ecobloom. Furthermore, funds have been acquired to realize batches of prototypes and iteratively develop the EcoGarden and its components.

Thus, crucial and foundational elements for start-up development were established before starting the master theses. Both our master theses intelligently build upon this initial foundation and leverage existing achievements. The next chapter elaborates more on what has been done and the main focus area of the thesis.

2 | Scoping the project

This master thesis serves multiple purposes and its set-up aims to establish a win-win condition where novel and relevant knowledge is contributed to literature and the entrepreneurial world, while Ecobloom reaps the benefits of the findings. Therefore, the current state of Ecobloom was analyzed and the next steps for optimal future growth were determined. The illustration below roughly views the status of Ecobloom at the beginning of the graduation period (figure 3).

At the start of the thesis, Ecobloom needed to strategize the market introduction of the EcoGarden in order to launch it on the market effectively. Primarily with the purpose to establish significant growth with the EcoGarden. The product development of the actual proposition was finalized for approximately 60%, which means that during the strategizing activities, product development was intertwined in the process. However, mainly the third step in figure 3 is addressed in the thesis. This is the first important consideration in the process of scoping the assignment.

Parallel to the process illustrated in figure 3, Ecobloom needed develop and professionalize itself as an organization in order to be able to manage the growth in the sales of the first proposition. On the other hand, this organizational development is crucial to expand business with future innovations, ensuring long-term and sustained growth. Therefore, strategizing on an organizational level is involved as well. Chapter 2.2 elaborates more in-depth on this important distinction that has been made between the proposition and organization.

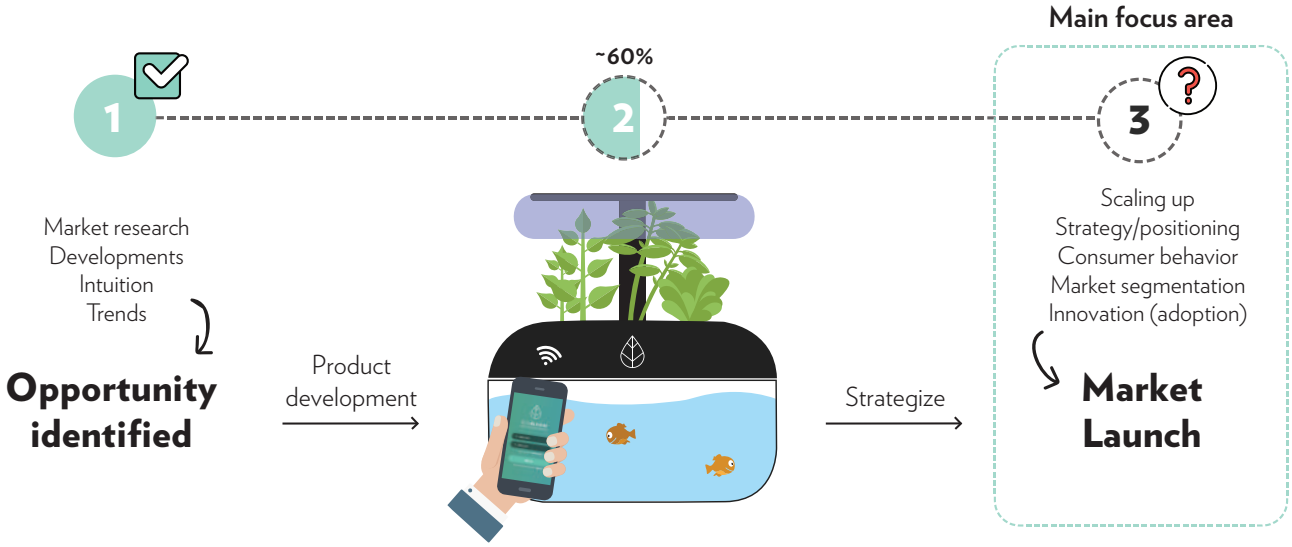


Figure 3: Focus are of the thesis

2.1 | Problem shaping

To create an understanding of the opportunities within the scope of the thesis, this section discusses the initial problems posed by literature on scaling-up and our own findings on consumer acceptance of aquaponics products. The consumer acceptance of aquaponics products is a problem related to the case study start-up Ecobloom.

1. Rapidly scaling-up (proposition level)
There is a lot of literature regarding the scaling up of new products. It is said that the best way to scale up is to start with a niche and gradually scale up to different segments (e.g. Trout & Ries, 1986; Thiel & Masters, 2014). Or that positioning is an explicit decision to only concentrate on specific consumer segments (Aaker & Shansby, 1982). However, by limiting the scope to only certain segments and scaling up gradually, a start-up risks expanding business too slowly which gives competition more time to react. Moreover, literature points out that the high pace in technological development limits the window of opportunity for radical innovations to be introduced, established and the expensive investments recovered (Montaguti et al. 2002).

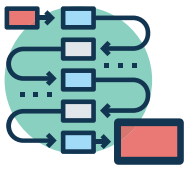
Furthermore, Cooper (2011) claims that fast changes in market needs result in reduced product life cycles for radical innovations. Therefore, quick market adoption is necessary before a competing proposition enters the market (Lafferty et al. 2005). This 'quick market adoption' is directly correlated with the consumer acceptance as mentioned below. Concluding, rapid scaling is of outmost importance and Ecobloom strives to identify a method to optimize the the chances of success within the window of opportunity.

2. Consumer acceptance (of 'aquaponics' products)
From a consumer behavior perspective, it is particularly important that 'aquaponics' products are accepted and adopted by society. As of now, products integrating aquaponics as farming technique into indoor farming products are not readily accepted and adopted by the mass market. Only a few specific niche consumer segments adopt products of Backtotheroots, one of the few direct competitors which operates from the US. However, we believe this relatively new product category could be extremely viable within Europe when marketed, branded and positioned correctly. Therefore, one focus area of the thesis will aim to grasp the essence of consumer behavior and acceptance. This consumer acceptance and consequently adoption of the innovation is considered the main driver for the proposition growth, which in turn will establish organizational growth.

3. Rapidly scaling-up (organizational level)
Literature lacks an integrated framework which combines the start-up scaling of a proposition and organization in one coherent whole. The process of growth happens within a complex interaction between many variables which makes it incredibly entangled and hard to grasp. The thesis aims to address problems that occur during the execution of the project which are related to either proposition or organizational growth. These problems are ill defined at first, but become more apparent during the process. The problems and challenges that occur during the period of writing the thesis are more extensively defined and explained later on in the report.

2.2 | Objectives and project outcomes

As mentioned before, this master thesis focuses on generating insights and ultimately frameworks that are applicable to start-ups in order to optimize the scaling-up process. Ecobloom is used as case study start-up to implement and (in)validate research findings and strengthen the framework and its validity. Therefore, the main objectives are formulated as follows:



1. Support start-ups in the process of rapid scaling-up.
   a. Create an organizational framework that supports growth.
   b. Create a framework for Ecobloom to rapidly scale-up their proposition.
      i. Create an understanding of the current consumer perception of 'aquaponics'.
      ii. Positively influence the innovation perception and adoption intention.
   c. Demonstrate the validity of the frameworks with Ecobloom.

Structuring complexity

To provide structure, two main components are distinguished and used throughout the report. First, the more abstract organizational level is separated from the actual proposition a start-up offers. In order to establish enormous growth of a proposition, an organization needs to be able to support this. This 'back-end' is considered the foundation of any start-up.

The second focus of this thesis is on a more practical level; the actual proposition a start-up offers. It entails the optimization of consumer acceptance and expansion of the sales of a proposition. Figure 4 illustrates this basic distinction and considers the growth of proposition sales as the main driver for scaling up on an organizational level. The two levels are deeply intertwined and interaction effects are continuously encountered.

This basic distinction divides the thesis' objective into subcategories. The organizational framework aims at supporting start-ups for short- as well as long-term growth (1a). Scaling-up a proposition focuses partly on a case-study specific area (1bi), thereby it critically investigates the consumer perception of aquaponics to be able to tackle one of the problems mentioned previously. Also, it takes into consideration general research fields to positively influence the innovation perception and adoption (1bii).

Last, Ecobloom is utilized to demonstrate the validity of the frameworks (1c), making it actionable and concrete. Thereby providing hands-on tools and examples for start-ups to implement.

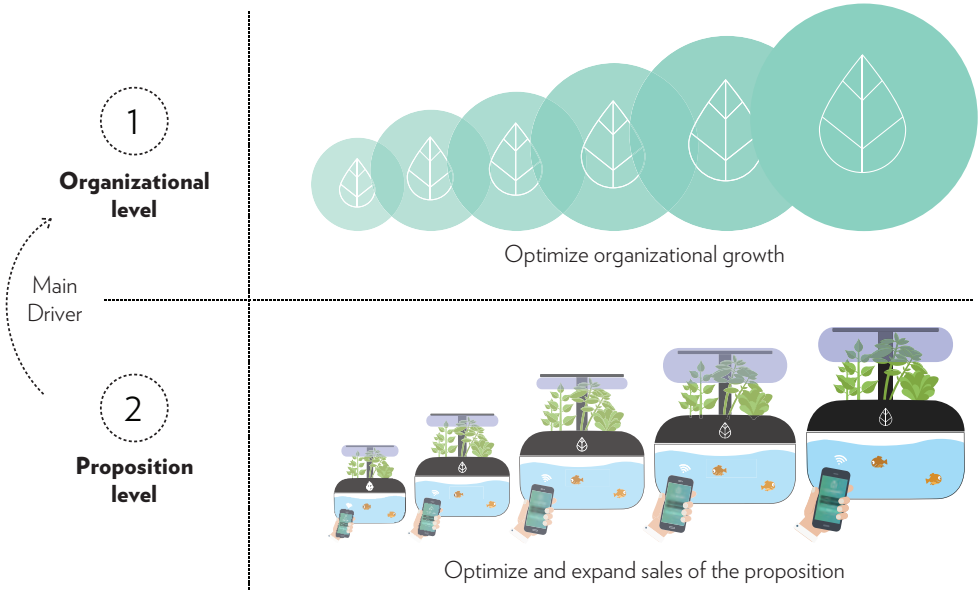


Figure 4: Growth on different levels

2.3 | Project approach

The research approach that has been employed during the execution of the thesis is action research, which intents to link action and reflection, but also theory and practice (Reason & Bradbury, 2001). The thesis combines many different sources of knowledge and is characterized by its highly iterative and experimental nature to optimally benefit from the entrepreneurial context.

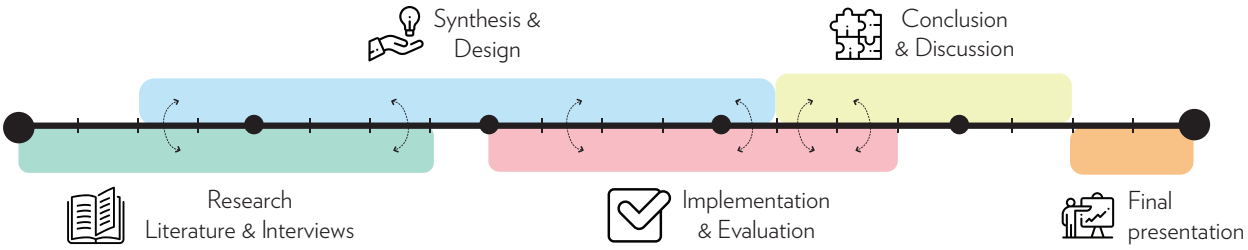


Figure 5: High level project approach

High level project approach

The activities are divided into five main phases which are displayed in figure 5. It starts with the initial research phase that explores different sources of knowledge and creates a foundational layer for the thesis. The double diamond method, adapted by Nessler (2016) is used to illustrate the diverging and converging focus over time (figure 6). This first phase is greatly divergent and associated with the 'discover' phase to create a comprehensive view of the relevant research areas in context.

Second, synthesis & design is performed in an iterative fashion and overlapping with the research. Consequently, parts of the framework are created in very early stages of the process. This constant synthesis throughout the exploration helps to maintain focus and rapidly links the most relevant findings back to the main research objectives. Thereby, converging knowledge to create the initial set-up of the strategic frameworks.

The implementation and evaluation of the frameworks are performed parallel to the design, to refine and enhance the framework further with knowledge obtained from the implementation. It is divergent in nature, because the complete framework is executed by Ecobloom, and much new data is gathered.

Last, the conclusion and discussion converge the knowledge from the implementation and evaluation and ends with the closing findings. Experts are consulted to evaluate and enhance the frameworks, thereby finalizing the design with the last iteration. The chapter suggests areas for future research and addresses limitations of the thesis.

The overlapping phases throughout the process indicate the iterative approach where I jump back and forth. This approach perfectly suited the context in which the process was performed.

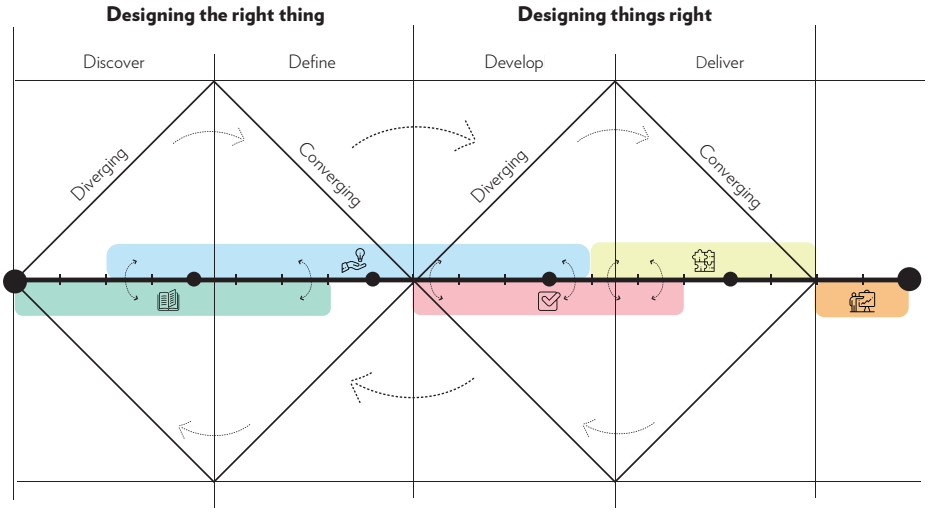


Figure 6: Double diamond, adapted from Nessler (2016)

Entrepreneurial innovation

Besides the Double diamond model, an 'entrepreneurial innovation' approach was utilized to maintain agile working processes, focus on empathy and fast experimentation. This combination of methods is adapted from Innovation Booster Amsterdam and implemented during the thesis to thrive in complex and dynamic environments and to ensure optimal results within short time spans and with scarce resources. The methods with their most important characteristics are summarized in figure 7.

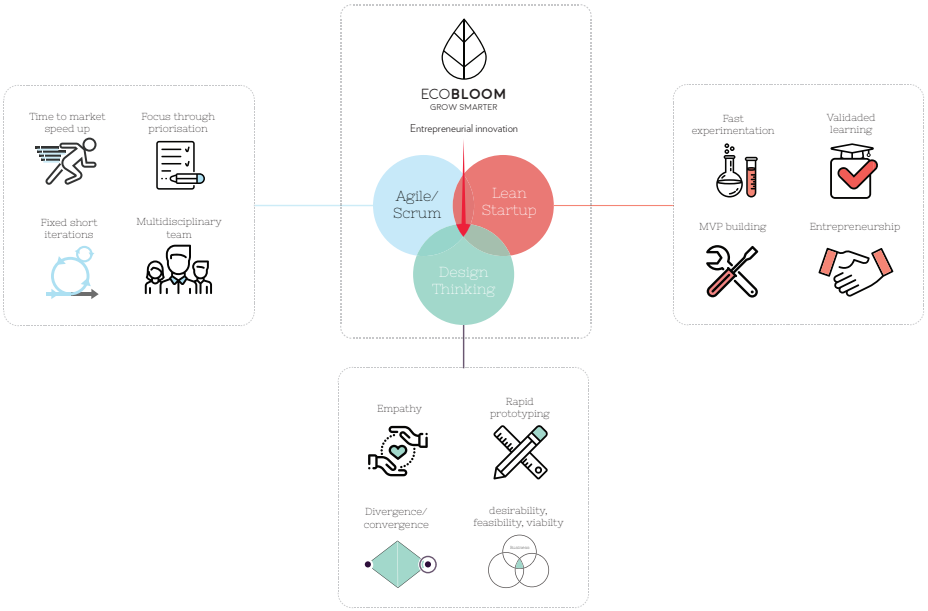


Figure 7: Entrepreneurial innovation, adapted from Innovation Booster

1. The lean start-up

Much newly found knowledge in this thesis is tested and validated through the methodology of the lean start-up (Build-measure-learn), through iterative testing the new theory is (in)validated (Ries, 2011). The methodology favors consumer input over intuition, experimentation over extensive planning and iterative design over a *"big design up front"* process (Blank, 2013). A practical tool 'riskiest assumptions', adapted from Innovation Booster assesses the assumptions and their priority to create guidelines before building a minimum viable product (MVP). It consists of two dimensions where assumptions are positioned based on how (non-) crucial and (un) known they are (figure 8).

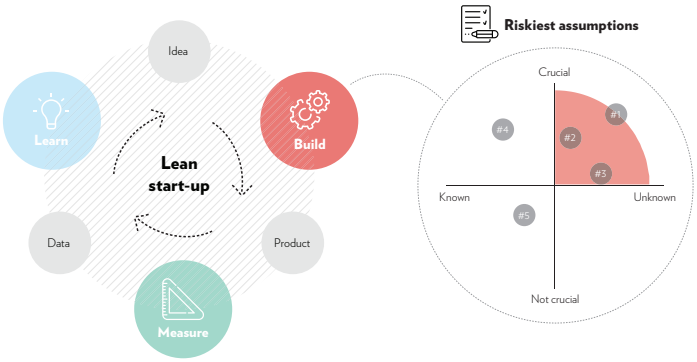


Figure 8: The lean start-up, adapted from Ries (2011)

2. Design thinking

Design thinking has gained substantial popularity in recent years (Dorst, 2011). Several important characteristics of the method are used. For instance, the constant evaluation through three lenses; desirability, viability and feasibility (figure 9). Moreover, empathy is considered an important characteristic within design thinking, according to Brown (2008). In the context of the thesis, much consumer research was conducted to understand the person's condition from their perspective. In other words, during many interviews and observations we have tried to place ourselves in the interviewees or respondents' position.

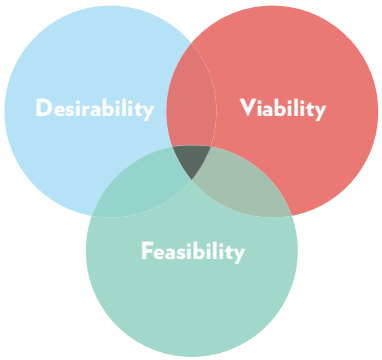


Figure 9: Design thinking, three lenses

3. Agile/scrum

Certain elements of agile/scrum are used in order to boost our time to market by working with short iterations. Moreover, the team maintains focus throughout the process' execution by constant prioritization of tasks. Last, daily standups and updates are performed to keep the team aligned and the overall process synchronized.

2.4 | Methodologies

Various methodologies are utilized during the graduation period. To increase the thesis' validity and research reliability, different sources of data are acquired. The methods that are used during the assignment are literature studies, the case study, qualitative and quantitative consumer research (e.g. interviews and questionnaires) and expert consulting. The symbols used throughout the thesis indicate with what method the data is obtained.

Literature study

One of the primary sources of acquired knowledge during the research phase has been the literature study. To scope the assignment, relevant topics were defined and clustered. The main areas were: Consumer behavior, categorization, hybrid products, (entrepreneurial) strategy, positioning, market segmentation, go-to-market, crowdfunding, innovation adoption and diffusion, product platforms and ambidexterity. Throughout the execution of the thesis, literature was continuously consulted to evaluate data from the case study. Furthermore, additional topics in literature were covered when the necessity emerged. The breadth and depth in which the different literature topics were analyzed depended on the importance and priority.

Case study

Performing a case study has been chosen to understand and (in)validate acquired knowledge and to create new and original insights/learnings. This qualitative research methodology builds detailed theory inductively through contemporary phenomena analysis (Eisenhardt, 1989). Consequently, this research method provides three main advantages. To start off with, it emphasizes a holistic perspective which is context grounded (Ravitch & Carl, 2015). Moreover, it is suited in understanding details that are associated with the 'how' and 'why' questions of phenomena (Yin & Robert, 2015), providing in-depth explanations in specific contexts. Last, it adopts an inductive and idiographic perspective to theory building, according to (Yin & Robert, 2015).

Expert interviews and meetings

To make optimal use of the period at Epicenter Stockholm and its benefits, several start-up experts were interviewed to gain knowledge about the process of scaling up. Last, several knowledgeable experts from my network were interviewed about their vision and experiences of start-up growth.

Consumer research

Both qualitative and quantitative consumer research methods were used, to increase the validity and reliability. The interplay between the two is shown in figure 10.

a. Qualitative consumer research (creating depth)

In order to gain in-depth insights and consumer opinions during the case study, qualitative methods were executed.

- Interviews: Semi-structured, informal, face-to-face interviews were performed as knowledge producing practice through interaction between an interviewee and the interviewer (Brinkmann, 2014).
- Laddering interviews utilizing the means-end chain methodology, proposed by Gutman (1982) has had many relevant applications and was therefore used.

b. Quantitative consumer research (creating breadth)

To (in)validate acquired insights from the qualitative consumer research, the following methods were applied:

- Digital questionnaires with pre filled-in answers.
- Other methods to quantify qualitative data (e.g. online Facebook laddering interviews).

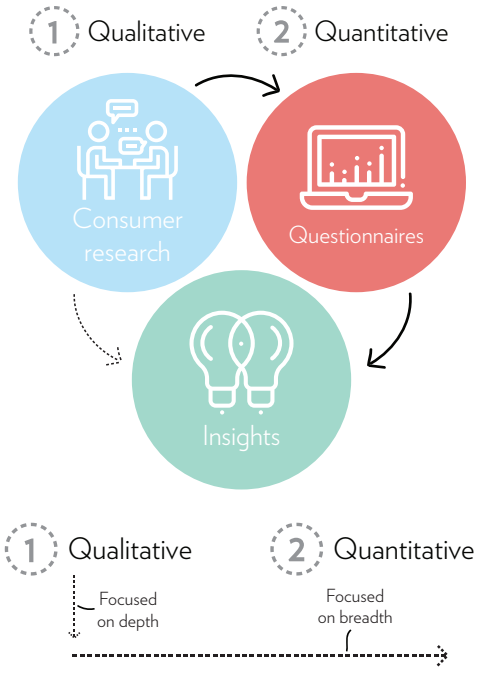


Figure 10: Qualitative and quantitative focus

2.5 | Relevance of the project

One of the main relevant elements of this project is to be found in the comprehensive and actionable scaling frameworks that are applicable for start-ups. The frameworks provide a relevant overview for start-ups to optimize the potential of a current proposition and gives guidelines on how to prepare them for a changing external environment. Furthermore, expanding Ecobloom's business has societal relevance, in a sense that it contributes to certain environmental issues.

The start-up Ecobloom was utilized as case study during the graduation assignment. It is a good carrier and fitting case study, because of several reasons related to the TU Delft.

1. To start off, it relates to the mission of the TU Delft, faculty IDE. The company's intentions are aligned with the faculty's mission to improve lives and address societal challenges by combining feasibility, desirability and viability.

2. Ecobloom as a start-up aligns with the faculty's 'Design for sustainability' research area, that focuses on creating products and services which are sustainable, but simultaneously also deliver improved value in a business and user context that is dynamically changing.

3. As the TU Delft, faculty IDE, has proposed future designer profiles. Executing this assignment with Ecobloom as case study perfectly fits the 'critical mass designer.' (e.g. "*Is entrepreneurial, understand commercialization and branding. Understand technology, the scalability of it as well as the personal touch. Scale ideas or designs to the right scale to make it stick.*")

Societal relevance
Besides the academic and entrepreneurial relevance of the thesis' deliverables, Ecobloom's vision to make this world a more sustainable place for future generations is also highly relevant for society. With the growth and expansion of Ecobloom's current and future products, positive impact is generated. We aim to combine technology and nature in a powerful way to contribute to various sustainability concerns.

Project goal

To support start-ups in the process of rapid growth. Organizational as well as scaling the proposition.

Research

To address the problem statement of the thesis more specifically, different subjects within literature are clustered and examined, creating a holistic and comprehensive theoretical framework. This section introduces the theoretical framework and its components in detail.

Theoretical framework

The theoretical framework was established in collaboration with the supervisory team, several professors from the TU Delft and Hamza. Literature is categorized and topics are assigned to one of the three lenses; desirability, viability or feasibility. The three lenses are fully intertwined, but the thesis mainly focuses on the desirability and viability aspects. Feasibility elements are also handled during the graduation period, but not emphasized in the report.

Strategy is studied to lay the foundation for both the organizational and proposition level. While consumer behavior is studied in order to obtain knowledge for growth of the proposition level. It focuses on how to influence the consumer acceptance of an innovation and consequently, the innovation adoption. In the next section it is explained more detailed which parts within consumer behavior and strategy are investigated. Figure 11 illustrates the initial theoretical framework.

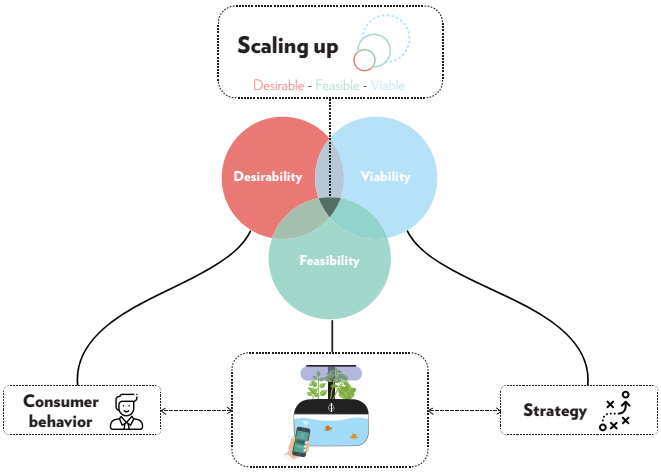


Figure 11: Initial theoretical framework

1. Strategy

To address the strategic considerations of rapidly scaling up a start-up, this literature review section consists out of seven important elements. To start off, entrepreneurial strategy making and execution is explored to define the context. Next, positioning is an established phenomenon in literature, and it basically refers to the place that a brand occupies in the mind of the consumer (Trout & Ries, 1986). Its potential to establish the intended perception amongst consumers is the reason to include the topic in the strategy section. Second, Dibb & Simkin (1991) call the identification of target consumer groups market segmentation, and claim that consumers are divided into clusters with comparable buying characteristics and requirements. By doing so, a company can customize marketing activities more precisely and aimed at the individual customers' preferences (Camilleri, 2018). Also, market segmentation could be strongly linked to the positioning, in a sense that every consumer segment perceives the brand as intended.

Third, go-to-market research is conducted to create an understanding of marketing mix elements and their influence on innovation adoption. This literature has many touch points with e.g. positioning and its insights significantly contributes to the results of the case study experiments. Fourth, product platforms provide the opportunity to distribute products with e.g. shared technology to create a related set of market applications (Meyer & Lehnerd, 1997). Leveraging technological or organizational capabilities to rapidly expand to other markets or consumer segments, providing the potential for an effective scaling up process.

Fifth, innovation adoption and diffusion are included within the scope of this thesis, because of their direct link to consumer acceptance. The adoption attributes are taken into account for an optimal positioning and go-to-market strategy. Next, ambidexterity is included for its importance of sustainable future growth. Focusing on merely one proposition could be dangerous for long-term existence. Therefore, the balance between exploration and exploitation is extremely important. Last, crowdfunding is contemplated as one of the ways to validate the market potential and obtain capital to start production. Therefore, the road to the Kickstarter campaign has been partly included.

2. Consumer behavior

First, an initial understanding of consumer behavior in general is established. More specifically, what drives human behavior and how it can be predicted or influenced. Hereafter, the acceptance of consumers towards aquaponics products is considered as starting point to gain understanding of the consumer attitude towards aquaponics. Next, the attitude is examined, which is a critical component in predicting or reasoning behavioral intents among consumers.

Moreover, the categorization theory and 'hybrid products' are studied as part of the consumer behavior. Both these phenomena are considered important for the product of Ecobloom, because they have a great influence on the perception and attitude formation, and consequently the consumer acceptance. Figure 12 illustrates the correlation between the topics and how they influence each other.

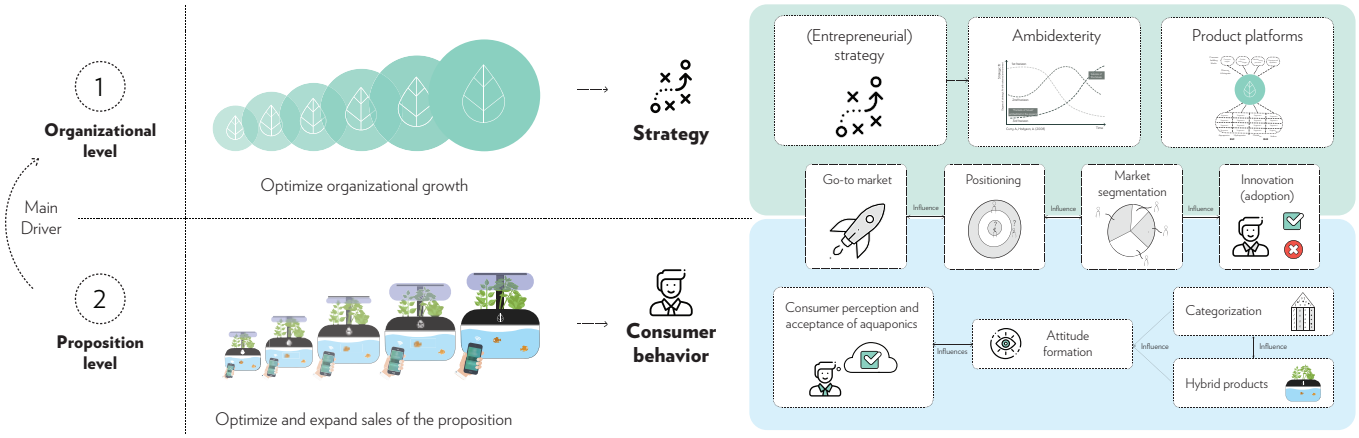


Figure 12: Theoretical framework, related to the levels of growth

Context of theoretical framework

Figure 13 illustrates more in detail why specific areas within the research phase are chosen and how they relate to each other. This context in which the main categories are highlighted mainly support the growth on the level of the proposition.

However, market segmentation, positioning, go-to-market and innovation adoption are strategic considerations as well. Thereby, also relevant for the organizational level.

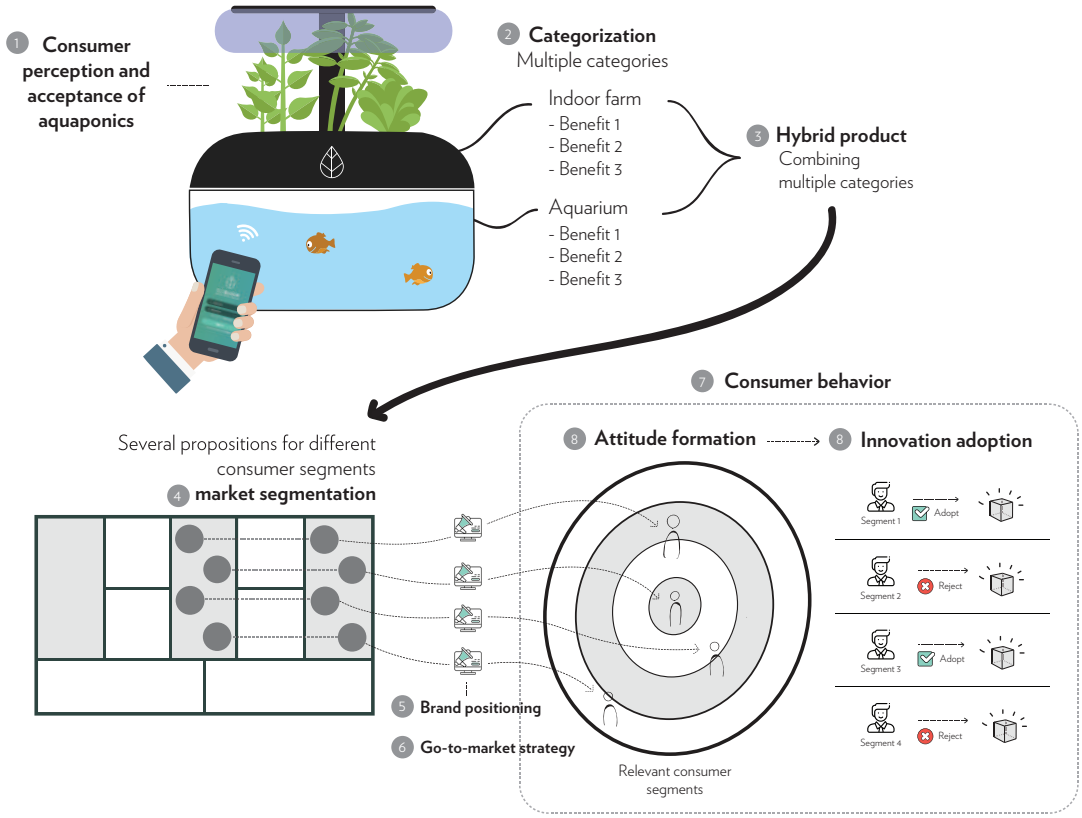


Figure 13: Theoretical framework within context

3.1 | Strategy

This section starts with a general exploration of strategy and links it to entrepreneurship. Various methods and theories on strategy (making) are explored to define a suitable framework for start-ups. Entrepreneurial strategies occur both in large and small enterprises. Therefore, management literature on corporate entrepreneurial strategies as well as start-up strategies are explored to create a holistic approach. It contributes to research objective 1a.

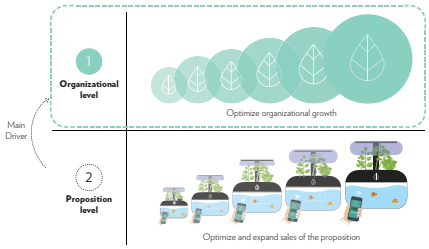


Figure 14: Focus on organizational growth

Strategy

Strategy is characterized as efforts to capture where a firm aims to go and how to get there (Kuratko & Audretsch, 2009). Mazzucato (2002) describes it as playing existing games in a better way or selecting new games to play. Actions could be considered 'strategic' if it causes a firm to perform better than competitors, while at the same time the 'competitive advantage' can be sustained. Not necessarily all decisions within an organization are strategic: some decisions are dedicated to maintain the status quo or increased competitive advantage does not have to prolong in the future (Mazzucato, 2002). Morris et al. (2010) claim that strategy establishes consistency of action and a sense of unity. It creates understanding of objectives and makes people work towards a common goal. Some scholars even claim that strategy starts when money is being spent (Cooper et al. 2000).

Literature synthesis from Mazzucato (2002) on strategy suggests that disagreements exist concerning the process in which strategies emerge. For instance, the design school describes strategy as a deliberate and rational process, whereas the evolutionary schools believe in a trial and error process where strategy is the product of experimentation. Moreover, differences are described in the emphasis of external factors, e.g. the industrial organization approach which mentions the industry structure to which a firm belongs as important element. Contradictory, the resource-based approach emphasizes internal factors, such as the organization of the production. Furthermore, there are different approaches of the perceived relationship between a strategy and its environment. For instance, the structure-conduct-performance approach believes in a static relationship where firms react to external conditions, whereas the Schumpeterian approach believes in a dynamic competitive environment in which the environment is actively been sought to change (Mazzucato, 2002).

The process of how strategies emerge in an entrepreneurial context are further explored in the sections on the next page.

Strategic management

Strategic management is defined by Schendel & Hofer (1978) as the process which ensures continual renewal and growth of a firm and is therefore shortly explored. It entails providing the context for the development and implementation of the strategy that drives the firm. Effective management of external threats and opportunities considering a firms' weaknesses and strengths are crucial components of strategic management. This component consists of the definition of the mission, specifying objectives, the development of strategy and creating policy guidelines (Hitt et al. 2009). Hitt et al. (2009) provide five important elements in strategic planning (figure 15):

- Examination of the external as well as the internal environment of the firm (SWOT).
- Formulation of short-range and long-range strategies for the firm (e.g. policies, strategies, objectives, mission)
- Implementation of the strategic plan (e.g. procedure, programs, budgets).
- Evaluation of the strategy's performance.
- Taking continuous action through feedback.

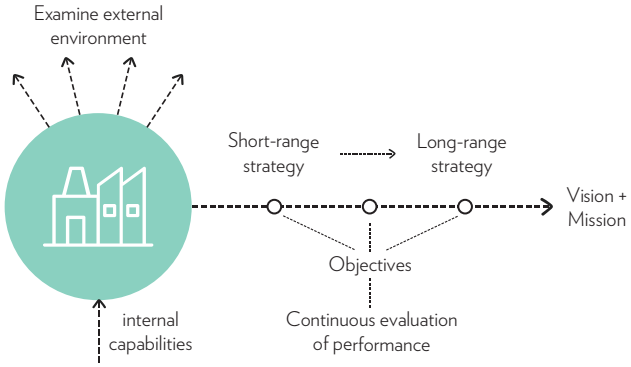


Figure 15: Strategic planning by Hitt et al. (2009)

It is posed by Kuratko & Audretsch (2009) that strategic management ought to be a mindset. Strategic thinking demands an external focus, implying a continuous search for competitive advantage. It includes the capacity to uniquely combine core capabilities and resources of the firm to construct new value. Last, discipline is required to identify a position or path and keep all the employees focused, while at the same time being flexible in the tactical approaches applied (Kuratko & Audretsch, 2009).

Entrepreneurship and strategy

To create an understanding of entrepreneurship, the description of Kuratko (2009) was used. He describes it as a process of creation, change and vision, and stresses the dynamic context. Creative solutions and new ideas are created and implemented by energy and passion. Crucial elements are the willingness to take deliberate risks, the formulation of an effective team, marshalling the resources necessary, building a decent business plan, and having a clear vision with an ability to recognize opportunities (Kuratko, 2009). When introducing entrepreneurship to strategy, the ability concerning where a firm can go, how to get there and how fast are enormously improved (Kuratko & Audretsch, 2009).

Entrepreneurial strategy making (ESM)

Hart (1992) states that strategy making is an organizational-level process which entails a range of activities to define and achieve strategic goals and missions. Decision making, strategic management, planning, analysis, but also the internal culture and vision are involved activities (Hart, 1992). Dess et al. (1997) propose that entrepreneurial strategy making is an approach which is characterized by its directive, opportunity-seeking, bold, experimentative and risk-taking elements. These findings are in line with the 'entrepreneurial orientation dimension' from prior research of Lumpkin & Dess (1996).

Strategy making in entrepreneurial mode

In his research, Mintzberg (1973) focuses on three modes of strategy-making. The modes of conduct are distinguished as 'entrepreneurial, adaptive and planning'. The entrepreneurial mode is characterized by four main components, according to Mintzberg (1973). First, the strategy making focuses actively on searching new opportunities, whereas problems are the secondary focus. Secondly, the power within entrepreneurial organizations mainly lies in the chief executive's hands. Third, the strategy making is characterized by enormous jumps forward even though the high degree of uncertainty. Last, the dominant goal is growth. Mintzberg (1973) concludes by pointing out that firms which operate in the mode of entrepreneurship should perceive the environment as adaptable, a force to be encountered and controlled.

According to Mintzberg (1973), entrepreneurs may have no charted plan, but the strategy is directed by their vision. This long-term focus contains large, bold decisions along the way. Entrepreneurs tend to behave proactive, flexible, thrive in uncertainty and evaluate proposals often judgmental (Mintzberg, 1973). The entrepreneurial strategy-making mode can be summarized and illustrated as shown in figure 16.

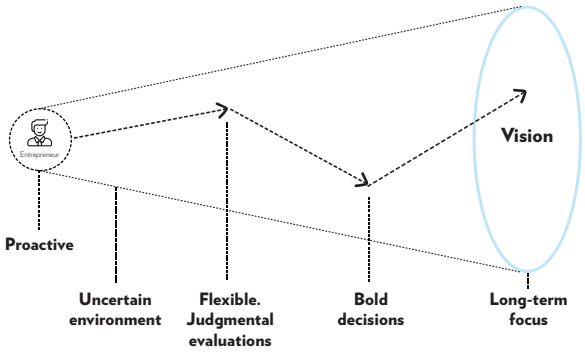


Figure 16: Strategy making, adapted from Mintzberg (1973)

Furthermore, Lei & Slocum (2005) claim that to compete in an industry two important factors need to be taken into account. These are the life cycle stages of the industry and the rate of technological development. The evolution of the industry depends on these two drivers. The impact of the changing industry on firms depends on the adaptability to fast changing future environments (Lei & Slocum, 2005). Thus, when a firm is able to quickly adapt to a changing environment, the impact will be reduced. These findings are in line with Reeves & Deimler (2011) who point out that adaptability is the new competitive advantage for firms.

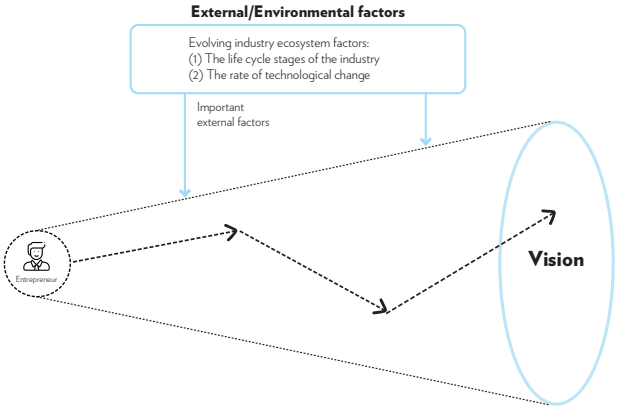


Figure 17: Scoping influenced by an evolving industry ecosystem, adapted from Lei & Slocum, 2005

Effectuation as entrepreneurial strategy

Sarasvathy (2001) demonstrates that entrepreneurs turn the conventional process of causation into 'effectuation'. She claims that causation is a process which aims to create an 'effect' and then selects particular means to generate that effect. Whereas effectuation works the other way around, thereby taking a set of means as given and concentrate on the different effects which could be constructed with those means. Both approaches have their advantages and disadvantages and are more (or less) effective in different contexts. Sarasvathy (2011) describes several contexts in which either causation or effectuation applies best. The effectuation process fits uncertainty and the context in which start-ups operate better in general. Characteristics of the context in which applying the effectuation process is the appropriate choice (Sarasvathy, 2011):

- Means are relatively unchangeable.
- Several possible effects could be created by the means.
- Constraints on the accomplishable effects, because of e.g. limited means.
- Criteria to determine which effect to pursue with the means.

Entrepreneurs start with 'the means' which are divided into three categories. *"They know who they are, what they know, and whom they know"* (Sarasvathy, 2001). At the level of the firm, the means are human resources, its physical and organizational resources, which corresponds with the resource-based theory of the firm (Barney, 1991). Sarasvathy (2001) continues with the human aspiration that plays an important role in the pursuit of a certain effect. As well as the criteria that is described as "affordable loss, acceptable risk". The strategic decision making process to choose and pursue a certain 'effect' is explored in the next section. Summarizing and illustrating this philosophy results in figure 18.

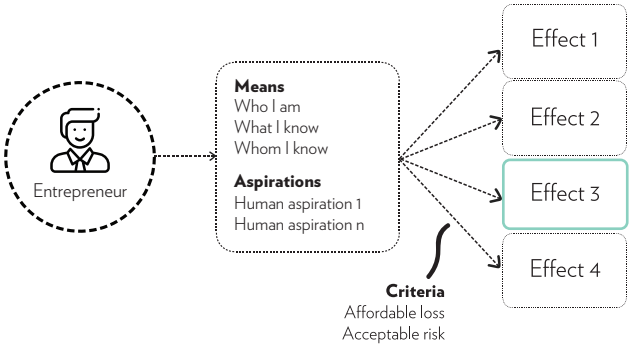


Figure 18: Effectuation, by Sarasvathy (2001)

Entrepreneurial (strategic) decision making

According to Gavetti et al. (2007) strategic decision making is crucial to long-term competitiveness and organizational actions. Calabretta et al. (2017) divide the phenomenon strategic decision making into two main categories; intuitive and rational. Although these categories are both considered of great value for strategic decision making, they differ significantly (Epstein, 1994). Rationality is characterized by its analytic, rule-based and systematic approach (Hodgkinson & Healey, 2011). Whereas intuition relies on fast, subconscious recognition of associations and patterns to conclude judgments (Dane & Pratt, 2007).

Rational decision making could be time-consuming, slow and labor-intensive, because it is structured and systematic in nature. Therefore, is it not always the fitting approach in dealing with complexity, time pressure and uncertainty (Dane & Pratt, 2007). Furthermore, Gore & Sadler-Smith (2011) point out that in these circumstances individuals can utilize a decision-making process which is intuitive. Not only does it help individuals to manage uncertainty, it also impacts creative comprehensions. This is critical in the process of exploration and generation of problem solutions, related business opportunities and ideas (Hodgkinson et al. 2009; Claxton, 1998; Miller & Ireland, 2005).

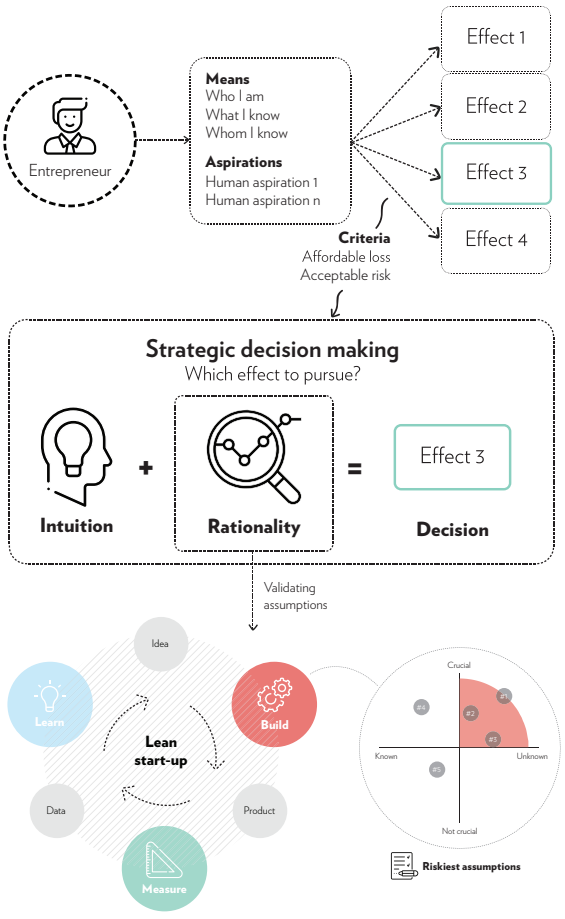


Figure 19: Strategic decision making

The entrepreneurial environment is complex, dynamic and fast-moving, therefore it can be concluded that much strategic decision making is done intuitively. However, when crucial and uncertain decisions are made, it is essential that e.g. market potential of specific propositions is assessed before scaling-up. In order to back-up intuitive decisions with validation and evidence, the lean start-up provides much opportunity. For instance, MVP's could be built that validate the most crucial assumptions before moving on. As mentioned before, the riskiest assumptions should be listed before building an MVP. It ensures the most critical components are (in)validated before continuing, as shown in figure 19.

Portfolio management

Cooper et al. (2000) emphasize the importance of portfolio management and posit two ways for a business to achieve success, namely; *"doing projects right, and doing the right projects."* In order to choose the best 'project' for a start-up, the entrepreneurial/strategic decision making involves portfolio management. Portfolio management, in turn, relates to project priorization. The relevance of this phenomena for the thesis' focus is in the assessment which 'effect' a start-up chooses to realize in the pursuit of the vision.

Several scholars have shown that project priorization is a key success factor (e.g. Elonen & Artto, 2003; Fricke et al. 2000; Cooper et al. 1999).

Archer and Ghasemzadeh (1999) define project priorization as: *"a periodical activity of strategic consideration, project evaluation, and portfolio selection of all new project proposals and ongoing projects that meet the firm's objectives in a favorable manner without exceeding available resources or violating other constraints."* The link between portfolio and strategy and the necessity to establish consistency between these two aspects has been pointed out in several studies (e.g. Archer & Ghasemzadeh, 1999; Artto & Dietrich, 2004). Therefore, the 'effects' that start-ups could create with their means, should be aligned with the overall strategy and contribute to long-term strategic goals.

Difficulties are experienced by management in choosing which project to pursue (Cooper et al. 2000). First, the prioritizing of projects and discriminating between go, kill and hold decisions are complex. Moreover, go/kill decisions are often devised without having decent information, which in turn, results in questionable decisions. These findings in management literature could be translated into important insights for the entrepreneurial world. In terms of this thesis, prioritizing the 'effects' that start-ups could go after with their scarce resources and deciding upon which one to pursue is difficult. Especially in the absence of solid information, therefore intuition plays an important role.

Important insights

- The literature on strategic management provides valuable findings. Many findings are translatable to the context of start-up entrepreneurship. Figure 20 summarizes the research of Hitt et al. (2009)

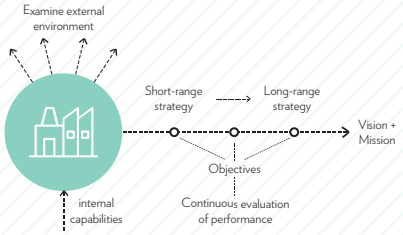


Figure 20: Strategic planning, by Hitt et al. (2009)

- The theory of effectuation by Sarasvathy (2011) rests on the central thought of uniquely combining core capabilities, resources and human aspirations to construct value. Its characteristics fit the entrepreneurial context and therefore it is considered highly relevant.

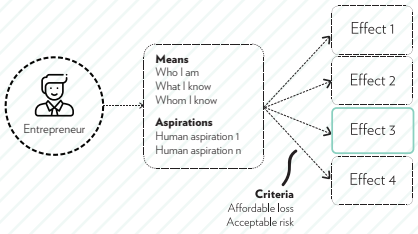


Figure 21: Strategic planning, by Hitt et al. (2009)

- The entrepreneurial mode of strategy is based on the assumption that entrepreneurs may have no charted plan of organization, but the strategy is directed by their vision of direction for the start-up (Mintzberg, 1973). Besides that, the dominant entrepreneurial goal is growth. In addition, Dess et al. (1997) claim that an entrepreneurial strategy is characterized by the elements: bold, directive, opportunity-seeking, experimentation, risk-taking.

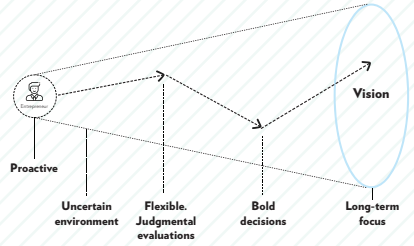


Figure 22: Entrepreneurial strategy, by Mintzberg (1973)

- Strategic decision making is both a rational and intuitive phenomenon. To deal with complexity and uncertainty (which is often involved in entrepreneurship) utilizing an intuitive decision-making process could be most effective (Gore & Sadler-Smith, 2011). However, to validate certain risky assumptions, building and testing with MVP's (adapted from the lean start-up method by Ries, 2011) could provide a more rational and secure basis for moving on and scaling-up. In addition, Sarasvathy (2011) points out that criteria are usually created which consists of affordable loss or acceptable risk to the given means.

- According to Cooper et al. (2000) a product innovation strategy should define areas for focus. The product types, key markets and technologies should be known and defined in order to create e.g. strategic boundaries and criteria for which 'effects' should be pursued next. Besides these areas of focus, it is mentioned by Lei & Slocum (2005) that two important factors that change the industry dynamics need to be taken into account. These factors are the life cycle stages of the industry and the rate of technological development. The impact of the changing industry on firms depends on the adaptability to fast changing future environments (Lei & Slocum, 2005).

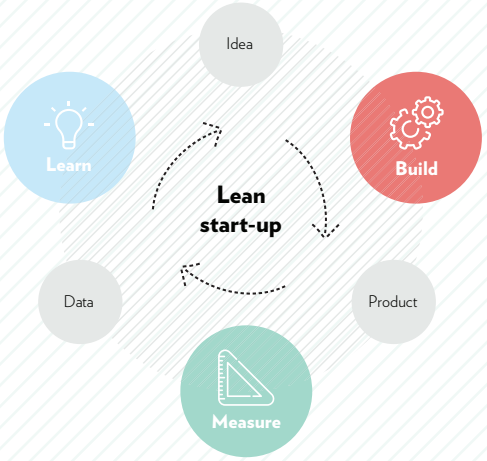


Figure 23: Lean start-up, by Ries (2011)

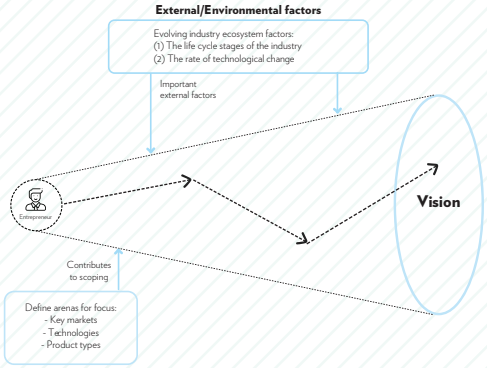


Figure 24: Scoping criteria

3.2 | Ambidexterity

As mentioned before, the definition of scale-up used in this thesis: "Scaling up something, means making it greater in size, amount or extent than it used to be" (Collins dictionary). This definition implies a time dimension, which is explored in this section. Also, ambidexterity is examined.

Baghai et al. (1999) propose that managers should pursue short, medium and long-term futures simultaneously. Therefore, three horizons were introduced metaphorically. Horizon 1 takes into account the extension and/or defense of the core business of a company. Whereas horizon 2 takes into consideration the building of emerging businesses. Last, horizon 3 aims at creating viable options for the future. Combined, these three 'stages' can ensure an organization sustained expansion (figure 25).

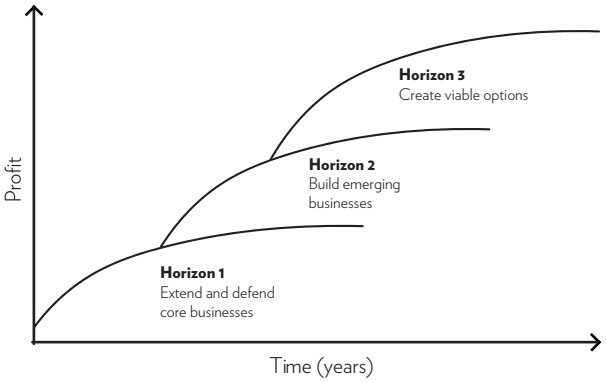


Figure 25: Three horizons, by Baghai et al. (1999)

The model was followed up by Curry & Hodgson (2008), as shown in figure 26. The basic idea is that horizon 1 loses 'fit' over time as the external environment changes. Whereas Horizon 3 are ideas or arguments about potential future scenarios, and they represent a more fitting response to the changing external environment. The second horizon is the intermediate space where a collision between the first and third horizon occurs. The period is unstable and values might clash, alternative paths to the future are suggested (Curry & Hodgson, 2008).

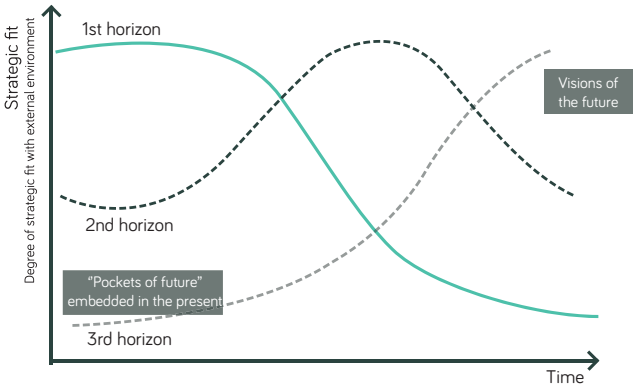


Figure 26: Three horizons, by Curry & Hodgson (2008)

The theory of three horizons portrays a relevant philosophy for future growth of an organization. The reason why products/services lose strategic fit with the environment is because of the degree of acceptance of ideas that change over time through e.g. political, economic, cultural or organizational norms (Curry & Hodgson, 2008). Therefore, it can be concluded that it is necessary to continuously monitor environmental variables in order to make a prediction (as accurately as possible) of what the future might look like. After defining this future landscape, it becomes easier to determine what role a company aspires to play in this future environment. It increases likelihood of actually reaching a strategic fit between environment and innovation.

Exploit vs explore

Thus, it can be concluded for an organization to scale-up and obtain growth, it needs to handle current business while simultaneously prepare itself for the future. This phenomenon is also known as 'ambidexterity' and a significant body of literature is dedicated to the topic. According to March (1991) organizational behavior can be divided into two gestalts which are fundamentally different. First, exploration engages individuals and organizations in search, experimentation, and variation. Whereas exploitation enhances productivity and efficiency through choice, execution, and variance reduction. Levinthal & March (1993) scoped this further down, where explore is "*a pursuit of new knowledge*," exploitation involves "*the use and development of things already known*".

He & Wong (2004) argue that organizational performance could be enhanced when pursuing both activities at the same time. Both exploitation and exploration are essential elements in organizational prosperity and learning, but entail contradictions which demand to be managed (Tushman & O'Reilly, 1996). Exploration-exploitation should not be viewed as discrete options, but rather as a continuum (Lavie et al. 2010). For start-ups, it is essential to exploit the current proposition and dedicate most of the limited resources to it. However, if efficiently managed, planning for the future could be performed simultaneously.

An important element of the exploration-exploitation trade-off is the choice between adaptability or stability. Exploration is connected to flexibility and change, whereas exploitation is associated with stability and inertia (Lewin et al. 1999; March, 1991). Adaptability is considered the new competitive advantage, because instability and risk are greater than ever (Reeves & Deimler, 2011). These authors claim that greater transparency, globalization, and new technologies are causing the business environment to constantly and rapidly change. Therefore, organizations should foster rapid adaptation. Sorensen & Stuart (2000) point out that organizations which have focused on and invested in exploitation experience great difficulties when striving for exploration, and contrarily. However, start-ups are generally agile and are able to react fast to the environment due to the lack of e.g. internal structures.

Lavie et al. (2010) provide a framework for organizations to take into consideration all the relevant aspects that are involved in ambidextrous management (figure 27). As innovation plays an increasingly important role in society nowadays, exploration and long-term focus needs to be embedded in organizations.

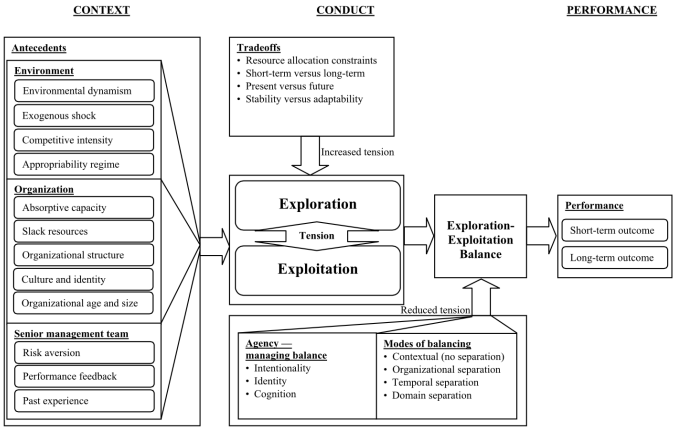


Figure 27: Framework for ambidexterity, by Lavie et al. (2010)

Important insights

- It is proposed that firms pursue short, medium and long-term futures simultaneously, because propositions loose 'fit' due to a changing external environment. Consequently, the external environment needs to be assessed continuously (e.g. Consumer behavior, competitive field, market trends, technological developments) in order to stay relevant as a company. Therefore, a start-up should have a mechanism in place to constantly assess external environment variables to create holistic future landscapes and determine what role can be played in this landscape (figure 29). The strategic fit of the innovation with the external environment could also function as criteria when choosing which effect to pursue.

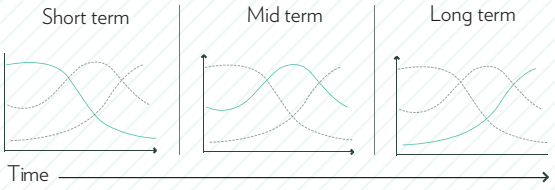


Figure 28: Short, medium and long-term futures

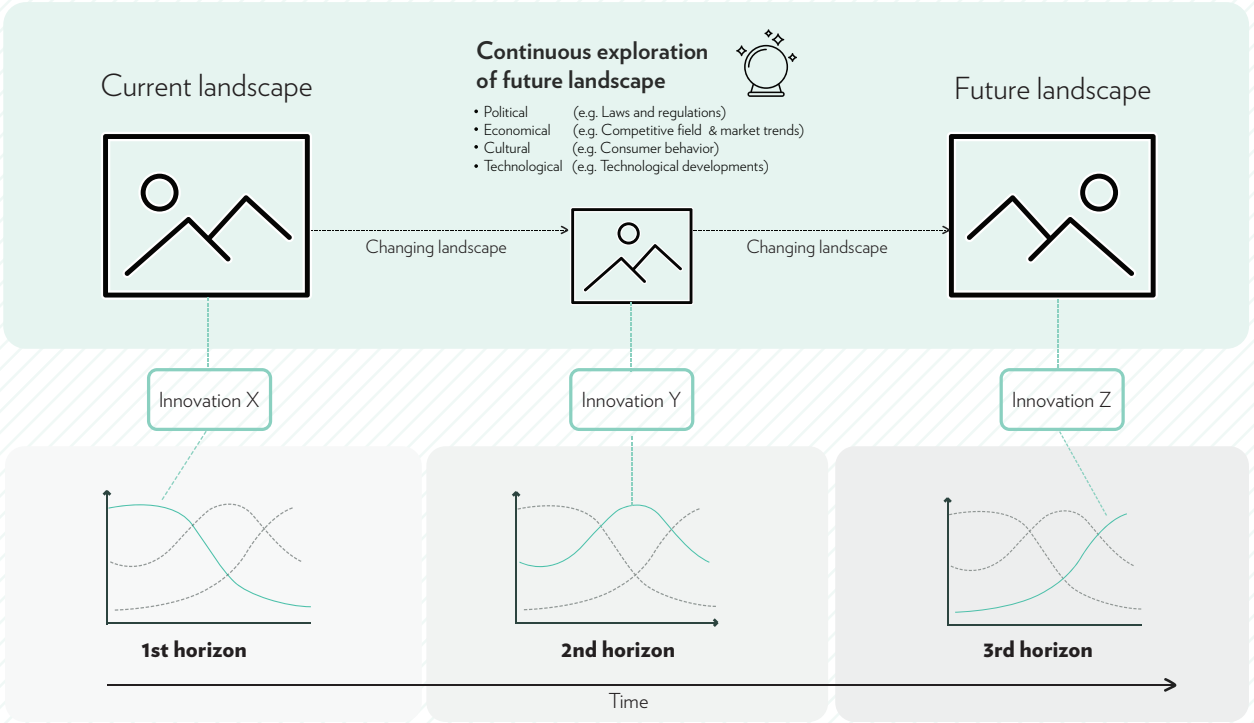


Figure 29: Creating innovation with future value

- Besides utilizing the current proposition, a start-up should also explore and pursuit new knowledge to a certain degree despite the scarce resources. In turn, this new knowledge can be translated into new products/ services to serve the market with.

- In order to assess the 'strategic fit' of the solution with the external environment, MVP's from the Lean-start-up method by (Ries, 2011) can be utilized. The framework for proposition scaling provides a method how to do this.

3.3 | Product platforms

In order for a start-up to scale fast, creating product platforms is a nimble approach to target different consumer segments with multiple propositions. A product platform is defined by Meyer & Lehnerd (1997) as a set of interfaces and subsystems which create a general structure that can be utilized to develop and produce derivative products efficiently. By establishing product platforms, a market domination strategy could be built which can provide access to new markets and consumer segments.

The main idea posited by Meyer & Lehnerd (1997) is to build an entire product family which leverages e.g. market understanding (consumer insights), product technologies, manufacturing processes and organizational capabilities (figure 30). These foundational elements function as building blocks and enable firms to expand business rapidly and obtain significant competitive advantage.

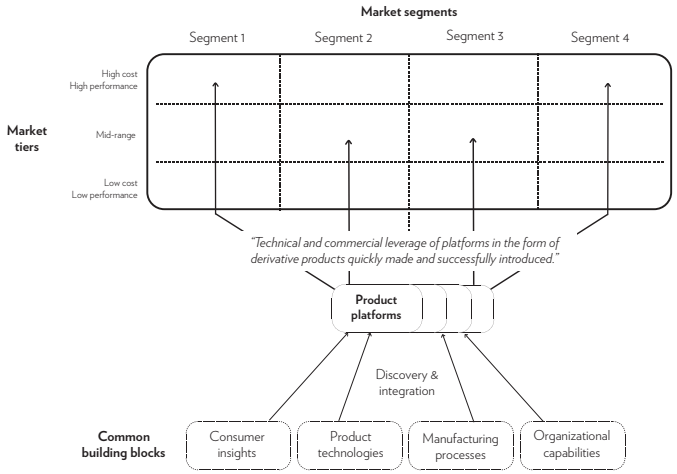


Figure 30: Product platforms, by Meyer & Lehnerd (1997)

Platform strategies

Several different platform strategies are provided by Meyer & Lehnerd (1997). First, the niche-specific platforms focus on limited sharing of subsystems and manufacturing processes.

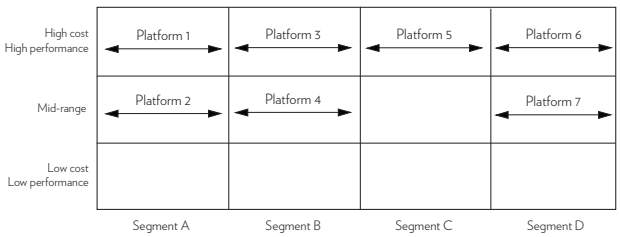


Figure 31: Niche-specific platform

Second, the horizontal platform leverage introduces series of new products across related consumer segments without reinventing the wheel. It allows for more rapid development and the utilization of e.g. technology across products.

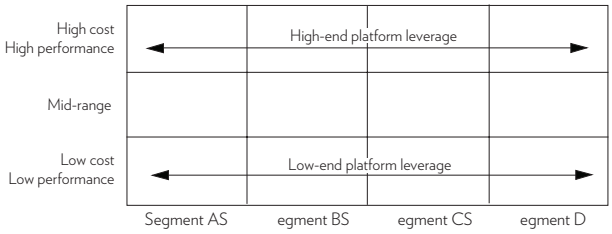


Figure 32: Horizontal platform

Third, within the 'vertical scaling of key platform subsystems' strategy, a firm addresses several price-performance tiers within segments with common platforms. With scaling down or scaling up, low or high performance tiers will be served. However, this strategy could be risky in a sense that weak platforms undermine the product line's competitiveness.

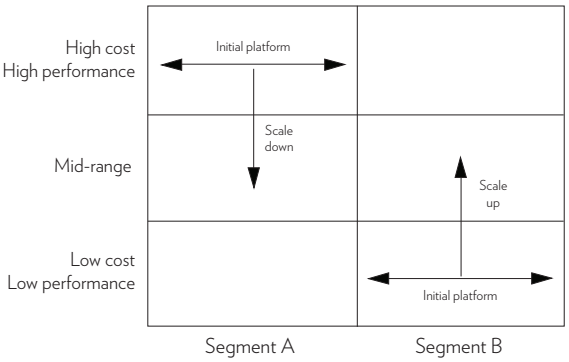


Figure 33: Vertical scaling

Important insights

- By building a platform consisting of market understanding (consumer insights), product technologies manufacturing processes and organizational capabilities a start-up basically builds a foundation with building blocks that are relevant for the further expansion of the business. This foundation should be continuously updated throughout the process of start-up growth. When leveraged correctly, significant growth can be obtained by exploiting existing capabilities (figure 34).
- Creating product platforms can prepare firms for future scaling-up incentives, by e.g. being able to quickly serve other consumer segments with derivative products.
- During the development of the proposition, several platform strategies or a combination of multiple strategies could be applied by start-ups. When leveraged successfully, derivative products can be quickly made and introduced. Modular product design serves as an enabler of quick expansion.

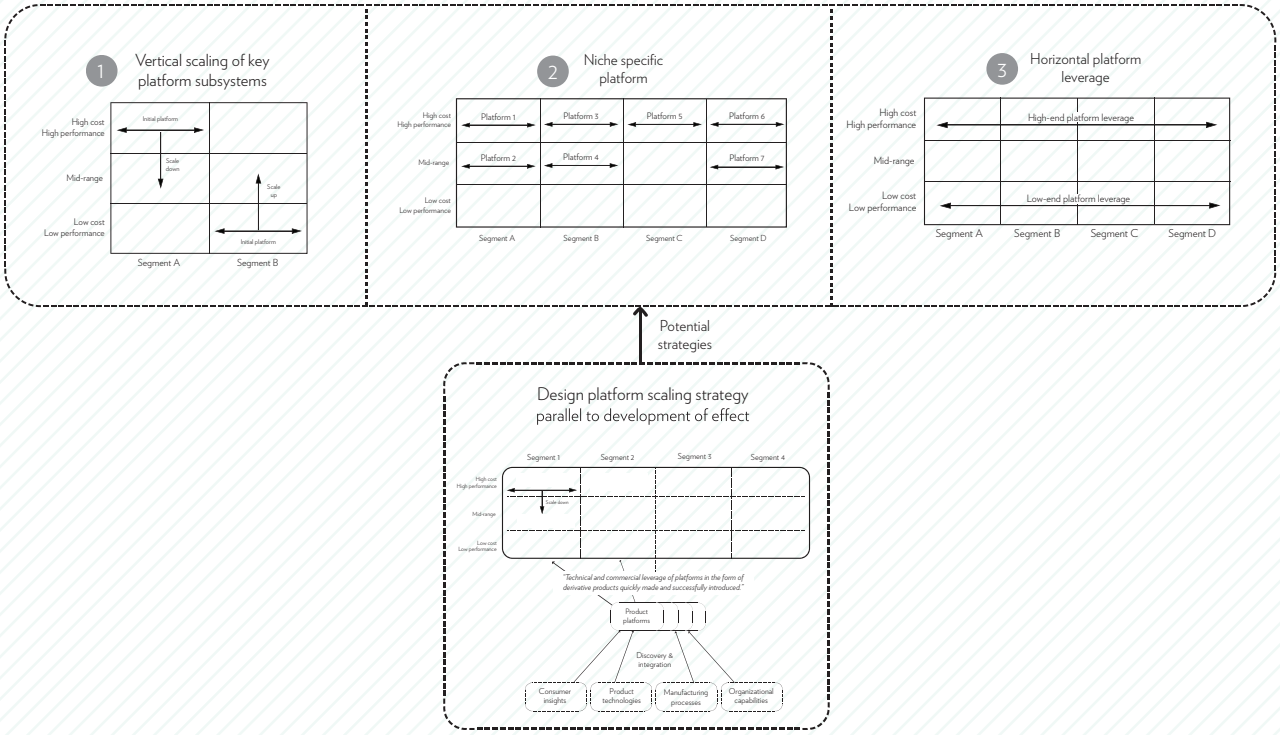


Figure 34: Product platform strategy for exploitation

4.1 | Consumer behavior

The next section focuses on the scaling-up of a proposition (figure 27) and contributes to research objective 1bii (positively influence the innovation perception and adoption intention). It explores consumer behavior in general and subjects specifically relevant for Ecobloom.

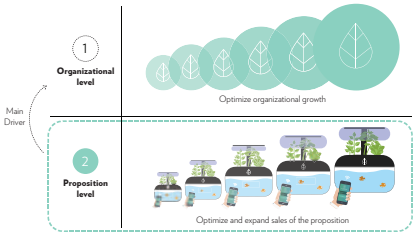


Figure 35: Focus on proposition growth

Consumer behavior is defined by the American Marketing Association as *"the dynamic interaction of affect and cognition, behavior, and the environment by which human beings conduct the exchange aspects of their lives"* (Bennett, 1995). It takes into account not only feelings and thoughts of consumers, but also the actions individuals undertake in processes of consumption. Furthermore, everything in the environment which has influence on consumers, e.g. product appearance, price information and advertisements are also considered within the field of consumer behavior. This definition involves interaction, exchanges and is highly dynamic (Peter et al. 2010).

The aspect of dynamism is apparent, because the actions, thinking and feeling of consumers and society in general are constantly changing. This causes product life cycles to be shorter than ever, and companies need constant innovation to address the changing consumer needs and provide them with superior value. New products, versions and upgrades of existing products, new strategies, new brands are all effects of these continuous innovation processes (Peter et al. 2010).

The way people behave could be explained by processes of motivation, according to Solomon et al. (2012). From the perspective of psychology, motivation takes place when a need is created which an individual want to fulfill. If a need is triggered, a state of tension prompts the individual to eliminate or reduce the need. This need could be either utilitarian (functional or practical) or hedonic (experiential, emotional) Solomon et al. (2012). The desired end-state could be described as the goal of a consumer. The difference between a consumer's present and ideal state creates tension which might vary in degree. The intensity determines the 'drive' and refers to the degree of arousal to reduce a tension. The path an individual chooses to satisfy a need is influenced by their distinct set of experiences and values created by e.g. culture, religion, ethnicity or national background. Moreover, this route is not only culturally determined, but individually as well (Solomon et al. 2012).

Values have been proven powerful forces in governing individuals' behavior in all facets of their lives. Values could be described as life goals or desired end states that people aim to achieve in their lives (e.g. success, security, happiness) (Rokeach, 1968, Yankelovich, 1981). To obtain desired values, meaning is derived from the benefits or consequences that using or consuming a product causes. Consequences are functional or emotional results or outcomes which appear if a product is purchased and used or consumed. These consequences could be perceived as being positive (benefits) or negative (Gutman, 1982). A knowledge structure called 'means-end chain' links consumers' knowledge about the product attributes to the consequences and ultimately the values. The main assumption in this model is that consumers desire products for utilizing the consequences, rather than for their own sake (Gutman, 1982). The proposed model by Gutman (1982) can reason consumer behavior to a certain degree through linking attributes, consequences and values.

In addition, Bordeaux-Rego et al. (2011) posit that this method offers a way to analyze the emotional and hidden psychological motivations of consumers that influence the purchase decisions. It provides a brand the opportunity to differentiate, not on an attribute level, but how the brand delivers higher level consequences and the personal relevance. Hereby, creating an "image positioning". Advertising strategies utilize this means-end chain understanding to create "cognitive" positioning (Olson & Reynolds, 1963; Reynolds & Gutman, 1984).

Predicting consumer behavior

In order to understand and predict the behavior of consumers, several theories have been developed by prominent scholars (e.g. Fishbein & Ajzen, 1975). These theories derive actual behavior from specific determinants, like the consumer attitude and the subjective norms. The theories are considered relevant to create a framework in which the consumer acceptance and adoption of certain products could be predicted. For instance, consumer acceptance could be measured by a behavioral intent, through the purchase intention or adoption intention. This behavioral intent is caused by e.g. the attitude, and the attitude is established by several independent variables which are discussed later on.

Theory of reasoned action

The theory of reasoned action (TRA) is a model from social psychology that investigates determinants of deliberately intended behavior (Fishbein & Ajzen, 1975). According to this model, the behavioral intention (BI) consists of two main components. The attitude toward behavior (A) stands for a person's negative or positive feelings about executing specific behavior and is established by behavioral beliefs and the evaluation of consequences. Whereas the subjective norm (SN) is described as *"the person's perception that most people who are important to him think he should or should not perform the behavior in question"* (Fishbein & Ajzen, 1975). The subjective norm consists of the normative belief and the desire to comply with the expectations (Fishbein & Ajzen, 1975).

The model looks as follows:

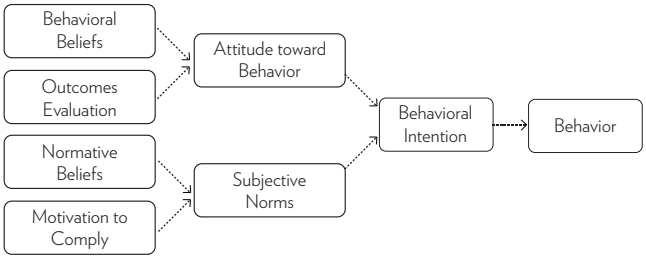


Figure 36: Theory of reasoned action, by Fishbein & Ajzen (1975)

Theory of planned behavior

In addition to the TRA, the theory of planned behavior is also constructed to explain and predict behavior in particular situations (Ajzen, 1991). However, it is differerent from TRA because it includes 'perceived behavioral control' which is a person's perception of the difficulty to execute behavior of interest (Ajzen, 1991) (figure 37).

It is argued that the relative importance of the three determinants of intention vary across situations and behaviors. Ultimately, these three determinants influence humans' intentions. The intentions refer to the indication of how much effort people are willing to exert, to execute the particular behavior (Ajzen, 1991). Consequently, the stronger the intention, the more likely the behavior is performed.

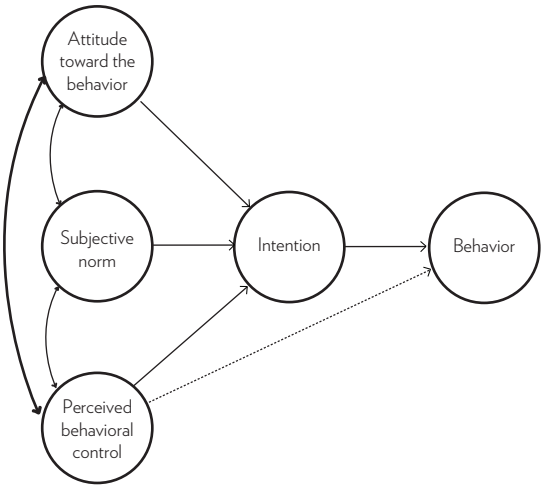


Figure 37: Theory of planned behavior, by Ajzen (1991)

Limitations of reasoned action and planned behavior

According to Conner & Armitage (1998) both models were developed in order to explain motivational and informational influences on behavior. Since the models suggest that consumers make behavioral decisions supported by elaborate consideration of accessible information, they could be considered as deliberative processing models (Conner & Armitage, 1998). However, Kahneman (2011) suggests a highly simplified perspective of human thinking that contradicts the assumption of humans as deliberate decision makers. Kahneman (2011) describes human thinking by two systems, one that is subconscious, emotional, instinctive and fast. In contrast, system two thinking is reasoning, deliberate, conscious and slower. The two systems act according to conflicting rulesets, thereby reaching contradicting conclusions often. Mainly because the first system relies on intuition and experience, whereas the second system uses deduction and conscious reasoning (Kahneman, 2011). This causes much behavior to be unpredictable.

To exploit this automatic and intuitive behavior of human beings, marketers utilize strategies like nudging and framing effects to optimize the effects of advertisement. These are relevant phenomena for the thesis. For instance, a marketer could use particular ways of communicating the same information to induce different emotional states. Cialdini (2007) elaborates on this phenomena in his book 'Influence: The psychology of Persuasion'. More specifically, six psychological strategies are explained which have a significant effect on people's compliance, called 'weapons of influence'. These weapons might be useful in the set-up of the stimuli for the experiments.

Important insights

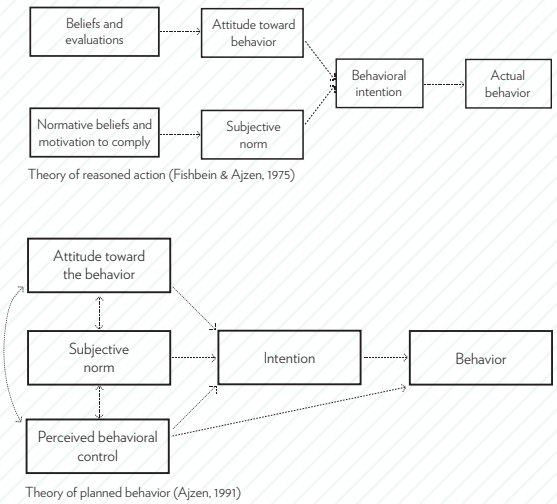
- Values have been proven powerful forces in governing individuals' behavior in all facets of their lives. To obtain desired values, meaning is derived from the benefits or consequences that using or consuming a product causes (Gutman, 1982). Therefore, in establishing the intended and positive attitude among consumers, the right product consequences and values should be communicated.

- Theoretical models are developed to explain consumer behavior (e.g. TRA and TPB). These models serve as guidelines to predict up to a certain percentage of accuracy of the actual behavior of consumers. The ultimate goal of planning and reasoning consumer behavior is to understand the process of how and why consumers go through stages from beliefs to behavior (figure 38).

- In addition to these models and their inaccuracies, the findings of Kahneman (2011) are considered as complementary element to the prediction of consumer behavior.

- Within the field of marketing strategy, much research has been done into advertisement effectiveness, and how different tactics create desired behavioral intentions. By understanding and influencing the consumer behavior, favorable behavioral intentions could be established.

Literature



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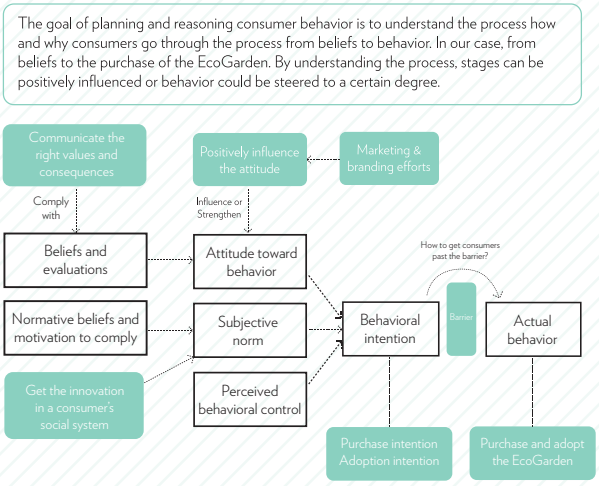

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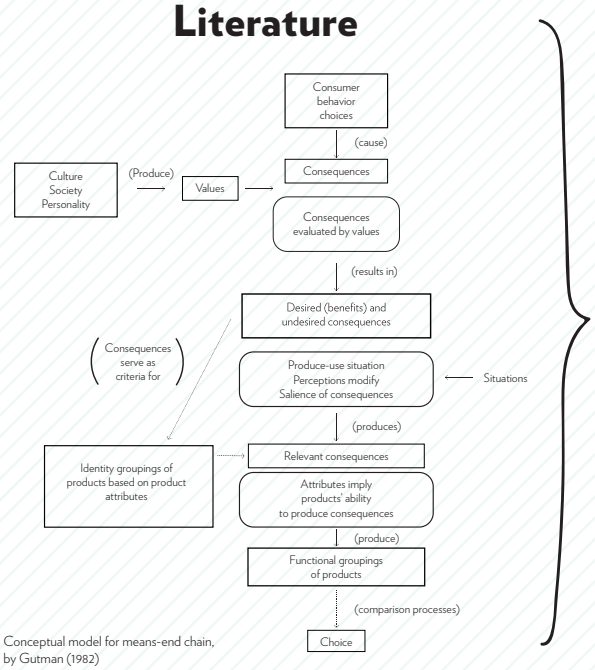

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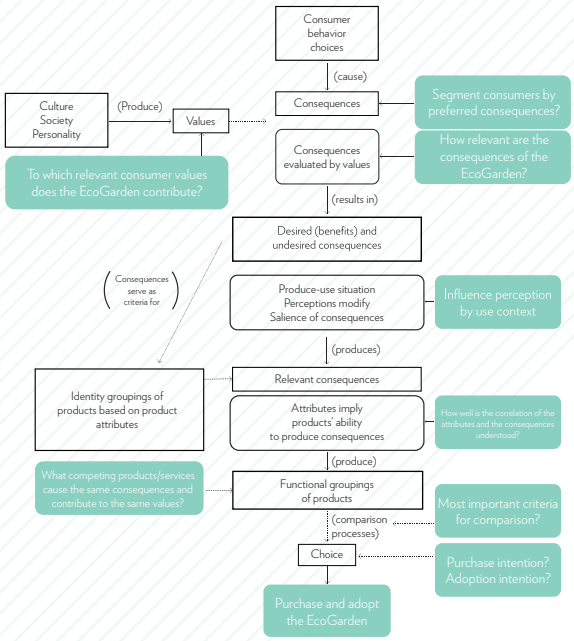


Figure 38: Translation of abstract models to relevancy for the thesis

4.2 | Consumer perception and acceptance of aquaponics

A growing body of literature about hydroponics, aquaculture and aquaponics indicate the market is rapidly expanding (Junge et al. 2017). To date, a limited amount of studies concerning the consumers' acceptance of aquaponics have been performed (Milicic et al. 2017). Approximately six relevant articles on consumers' acceptance have been published, examining Europe (Milicic et al. 2017), Minnesota (Short et al. 2017), Australia (Pollard et al. 2017), Malaysia (Tamin et al. 2015), Berlin (Specht et al. 2016) and the perception of aquaponics products in Romania (Zugravu, 2016). The results of these studies were examined and important insights were derived.

Contradictory findings were illustrated from these researches. For instance, only 27% of respondents in Berlin declared willingness to purchase products grown with aquaponics (Specht et al. 2016). Whereas Malaysia expressed high buying intentions and a highly positive attitude towards aquaponics products (Tamin et al. 2015). Moreover, Romania also takes a positive stance towards aquaponics products, mainly due the freshness and health benefits (Zugravu, 2016). Milicic et al. (2017) claim that these studies miss out on an important aspect, which is the fact that consumers are generally not acquainted with aquaponics as food production method. Therefore, an attitude is expressed while there is much unfamiliarity with the concept in question. Furthermore, the differences in findings point out that conclusions are not generalizable and are demographic dependent.

Types of aquaponics

Junge et al. (2017) address the different types of aquaponics, where hobby forms of aquaponics and commercial production are distinguished. Hobby forms could be backyard or household aquaponics and social/school projects (Hart et al. 2013), whereas commercial production aims to be profitable (Buehler & Junge, 2016). Moreover, aquaponics could be integrated within urban agriculture, as community project or small business, or as an aspect of rural agriculture (Junge et al. 2017). Furthermore, it is clear that all studies consider 'small scale' aquaponics as something which will range between 150 m2 and 3000 m2 (Junge et al. 2017), considering that approximately 1000 m2 is required for commercial operation to break even (Graber, 2016). However, concerns about consumer acceptance and societal concerns on micro-scale remain unanswered.

Relevant data about aquaponics

Although the thesis has a different focus than reports from literature, some findings are relevant and potentially generalizable. For instance, Short et al. (2017) point out that the price and safety and cleanliness concerns are the greatest reasons why respondents might be unwilling to purchase aquaponics products (figure 39).

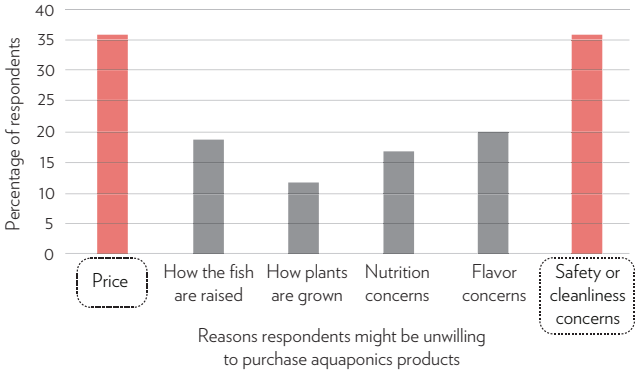


Figure 39: Reasons for unwillingness to buy aquaponics products, by Short et al. (2017)

Moreover, Milicic et al. (2017) group the negative associations of their respondents into three groups: (a) Skepticism in general about positive claims which involve aquaponics; (b) Unfavorable emotions caused by the relation between fish waste and vegetables; (c) Pessimistic judgment of animal well-being in aquaponics.

Focus of the thesis

The findings in all these studies focus on consumers' acceptance of products (e.g. vegetables) that were grown with aquaponics as production method. This general attitude could be relevant in evaluating the potential consumer acceptance of the EcoGarden. However, the consumer acceptance and adoption of an actual micro-scale aquaponics system is on a level that is not yet investigated. To clarify the difference in focus, figure 40 has been included. Many factors play a role in the societal and consumer acceptance. Important aspects are for instance beliefs, values, knowledge and social norms (Junge et al. 2016).

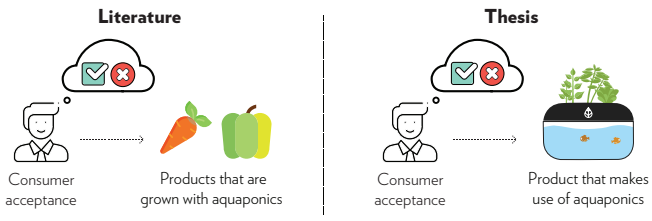


Figure 40: Focus in literature vs focus of thesis

Category knowledge

Next, several studies demonstrate the lack of knowledge about aquaponics amongst society. For instance, Short et al. (2017) and Pollard et al. (2017) both mention that two-third of participants/respondents were unfamiliar with the subject or had never heard about it.

In addition, Milicic et al. (2017) claim that over 50% of interviewees were unfamiliar with aquaponics and conclude that the education of consumers is urgent and necessary. In line with this conclusion, Short et al. (2017) claim that consumer education and marketing is key for expansion of the market.

Important insights

- Amongst scientific research a clear pattern can be detected in the field of aquaponics and its acceptance within society. The general knowledge about aquaponics needs to increase by educating consumers. As of now, the acceptance of aquaponics is hardly measurable, because consumers are generally not acquainted with aquaponics.
- During the studies to the consumer acceptance of aquaponics an attitude is expressed while there is much unfamiliarity with the concept in question among respondents.
- The negative associations of aquaponics products might potentially be generalizable and therefore are considered relevant for the product of Ecobloom. The main negative associations of aquaponics are the price and safety or cleanliness concerns. Other less crucial concerns are; How the fish are raised, how plants are grown, nutrition concerns, flavor concerns.
- The consumer acceptance of actually adopting a micro-scale aquaponics system has not been investigated in literature.
- It is not known how aquaponics is categorized and therefore what kind of expectations and associations people have when seeing/hearing about aquaponics. In the section 'categorization', this phenomenon will be further examined. This lack of knowledge could be utilized to steer the categorization process.
- The differences in findings from the six main studies on acceptance of aquaponics point out that conclusions are not generalizable and are demographic dependent. Therefore, the explanation and communication of how aquaponics works is critical at all geographical locations.

4.3 | Attitude (formation)

As the theory of planned behavior and theory of reasoned action show; the attitude of an individual has a significant effect on the (behavioral) intent. In addition, Peter et al. (2010) claim that it is considered one of the most important constructs to understand consumers. This chapter explores the subject more in depth, thereby contributing to research objective 1bii.

Attitude consists out of three dimensions: affect, cognition and conation (Blythe, 2013). According to Blythe (2013), the consumers' attitude towards a product determines to a large extend whether or not a product will be bought. Therefore, much marketing activities are about discovering these customers' attitudes to product offerings. Also, in changing the attitudes in order to align them with the intended attitude. Attitude is not behavior, but it can be inferred from it. Vice versa, behavior could be inferred from attitude, but this relationship is not reliable. Moreover, behavior influences attitude to a greater extend than attitude affects behavior (Blythe, 2013).

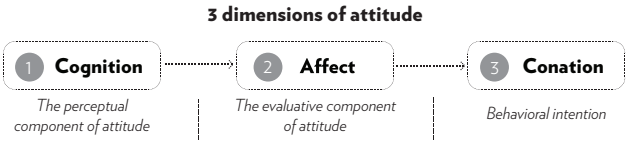


Figure 41: Dimensions of attitude, by Blythe (2013)

Earlier models demonstrate that the strength of an attitude is determined by the perceived instrumentality and the value importance (Rosenberg, 1960). Moreover, Fishbein (1980) mainly focuses on the consumer, rather than on the product (Blythe, 2013). According to Fishbein (1980) the attitude can be predicted by beliefs and evaluation. Both models taken together, create three distinct aspects (figure 42), as summed up by Blythe (2013).

1. Perceived instrumentality (e.g. I believe the Ford Mondeo is the most comfortable in its class.)
2. Evaluative aspect (affect) (e.g. I like comfort)
3. Value importance (e.g. Comfort is very important to me)

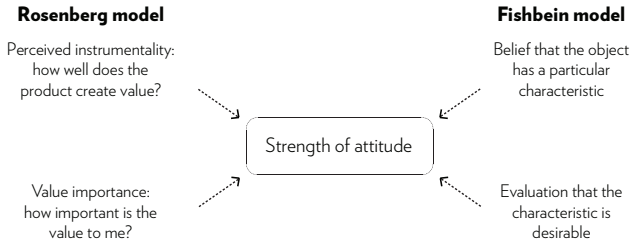


Figure 42: Strength of attitude, by Rosenberg (1960) & Fishbein (1980)

Displaying the determinants of the attitude's strength, the attitude and consequently, the behavioral intent gives the following framework (figure 43). A product or its advertisement should strive for an optimal strength of the attitude, so the more likely a consumer will perform certain behavior (e.g. buying and using the product).

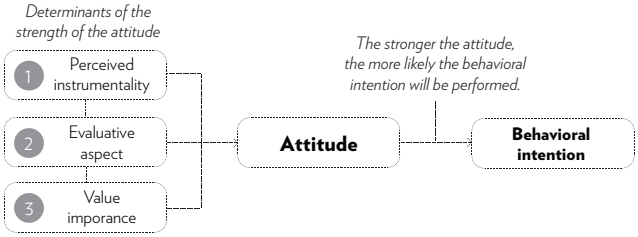


Figure 43: Attitude formation

Construal Level Theory and consumer attitude

Construal level theory (CLT) entails the phenomenon that individuals' thoughts and behavior are influenced by psychological distance. The dimensions of these psychological distances are space, time, social distance and hypotheticality. According to Trope et al. (2007) these four dimensions affect mental construct and consequently, guide evaluation, prediction and behavior. For instance, Carpio & Isengildina-Massa (2009) demonstrate that the spatial distance between individuals and a target influence behavior, because the willingness to pay is higher for local products. In addition, Karniol & Ross (1996) point out that the time dimension significantly influences individuals' motivation to attain goals. Individuals in their research had more motivation to reach goals with close outcomes, rather than outcomes which were far away. Many researchers conclude that individuals' construal level affects their attitude and behavior in various contexts. Therefore, the theory can be utilized in the development of the stimuli to positively influence the evaluation. Figure 44 illustrates examples of how the four dimensions could be perceived by individuals.

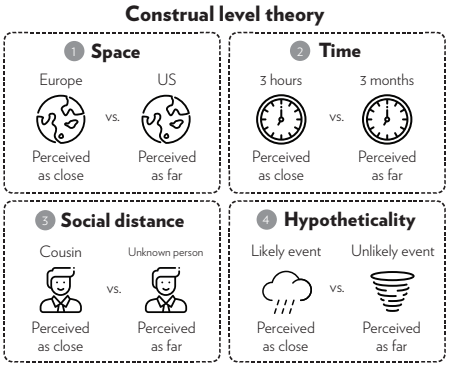


Figure 44: Construal level theory

Important insights

- The strength of an attitude positively influences an actual behavioral intent. The models of Rosenberg (1960) and Fishbein (1980) provide determinants of the attitudes' strength. Figure 45 demonstrates the relations between the components. A start-up should strive to optimize the strength of a positive attitude.
- The 'value importance' has a significant influence on the attitude, but this variable will differ per consumer segment. Communicating a product and emphasizing different values of the product could result in a stronger attitude and consequently in a greater chance that the intended behavior is actually performed.
- The construal level theory could be applicable to strengthen the attitude further by creating a perceived close distance (e.g. space dimension: Focus on local initiatives), as shown in figure 46.
- *Attitude formation and consequences*
  Several studies point out that certain independent variables form an attitude. Hereafter a behavioral intent is created (e.g. Bruner & Kumar, 2005; Schierz et al. 2010; Kleijnen et al. 2004). Next to the independent variables, covariates could be taken into account which might have a moderating effect on the behavioral intent. The following set-up of the attitude formation and behavioral intention framework has been created. Ultimately, the goal of the behavioral intent is consumers to purchase and adopt the product a start-up offers. The consumer acceptance could be derived from the performed behavior.

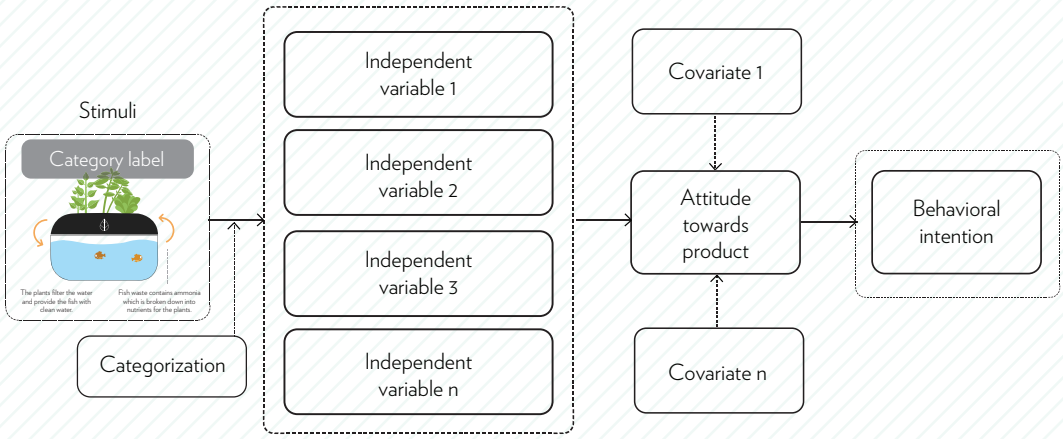


Figure 45: Behavioral intention linked to stimuli

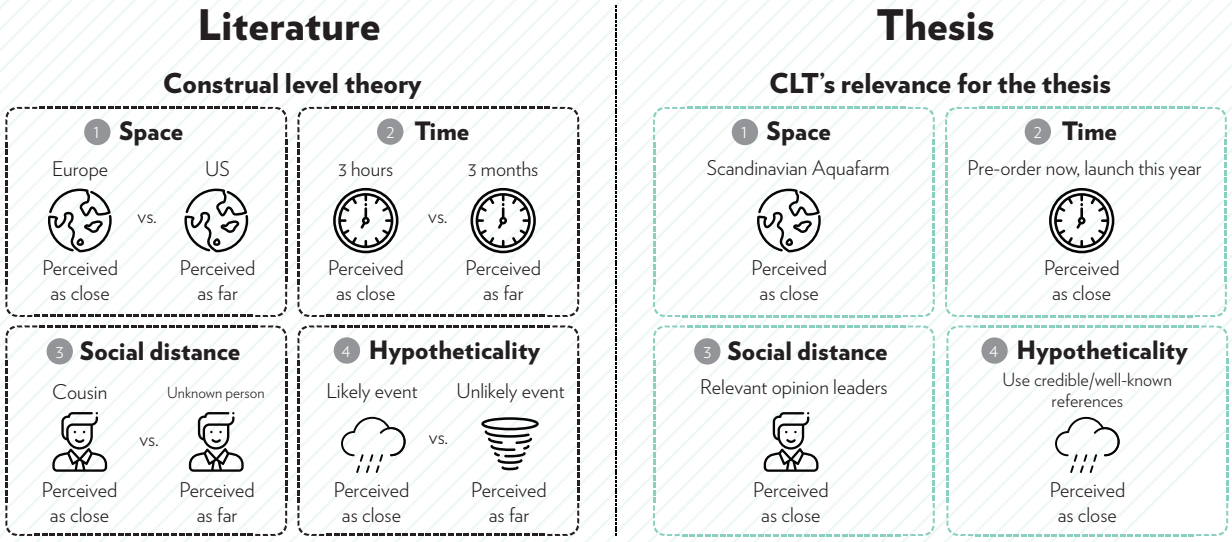


Figure 46: Construal level theory applied

4.4 | Categorization

Categorization theory is an established phenomenon in marketing and psychology literature and it plays an important role in new product learning (Gregan-Paxton et al. 2005). It entails the central cognitive activity of arranging objects and events into categories (Cohen & Lefebvre, 2005). In essence, it involves comparing a specific target and categorical knowledge (Cohen & Basu, 1987). Sujan & Bettman (1989) point out that categorization has an important influence on the process of attitude formation. Therefore, it is important to understand the link between categorization and attitude formation. Illustrations of Ecobloom's product are used to explain and clarify abstract concepts. The chapter contributes to research objective 1bii.

New products and categorization

In the context of product categorization, Lehman (1994) calls products which do not fit exactly in an existing category a "really new product". These products cannot directly be categorized within current product concepts (Gregan-Paxton & John, 1997). To understand and categorize really new products can pose challenges. Mainly because consumers need to construct new structures of knowledge, instead of adjusting existing ones (moreau et al. 2001). Moreau et al. (2001) point out that assigning plausible category labels to a really new product, the categorizations, expectations and preferences of consumers get significantly influenced. In other words, the categorization process can be steered by utilizing the right signals.

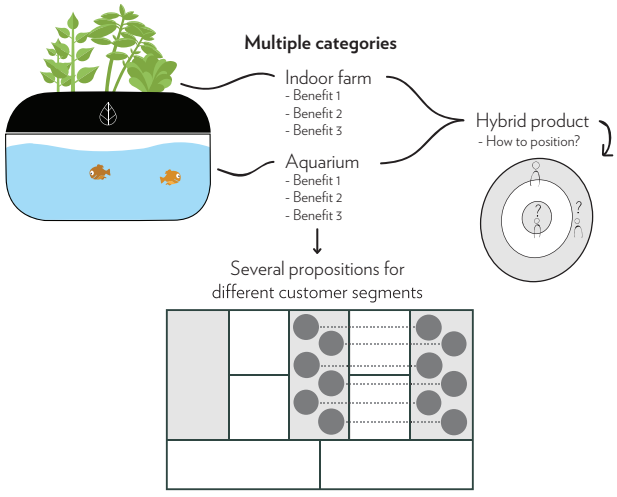


Figure 47: Categorization challenge/opportunity

categorization-based knowledge transfer

When learning about new products, research in the field of psychology and marketing suggest that customers frequently utilize information that has been covered in existing categories of products (e.g. Gregan-Paxton & Roedder John, 1997; Yamauchi & Markman, 1997). This is mainly caused by the shared properties that novel innovations contain, called 'categorization-based knowledge transfer' (Moreau et al., 2001). Research about knowledge transferring proposes the transferring of knowledge from existing categories to unfamiliar ones in three stages: access, mapping and transfer (Gregan-Paxton & John, 1997; Gentner, 1989; Markman & Wisniewski, 1997). More specifically, characteristics of the accessed category are projected onto characteristics of the target object in order to assist knowledge transfer (Gentner, 1983; Gentner & Markman, 1997) (figure 38).

Schema research

Sujan & Bettman (1989) posit that over time, consumers are likely to develop schemas or certain expectations about product categories. Expectations could include the relative importance weight of attributes, the variability of attributes across brands and hypotheses about the values of attributes. Schemas can be described as *'cognitive structures representing one's expectations about a domain'* (Bettman, 1979). These schemas pose a significant effect on the processing of new information.

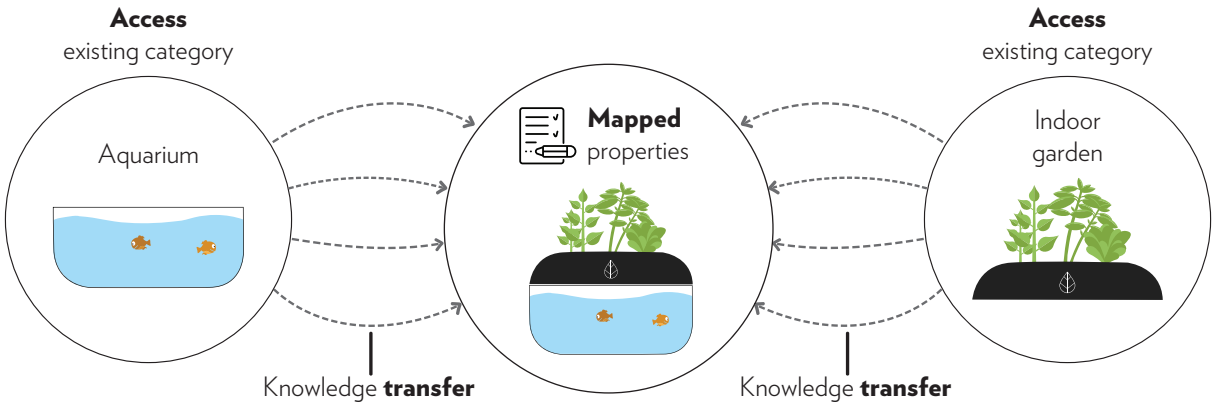


Figure 48: Categorization-based knowledge transfer

Categorizations and ads

Moreau et al. (2001) point out several important findings in the field of categorizations and advertisements. First, the process of consumers' categorization of new products can be significantly influenced by a product category cue implemented in an ad. It steers the categorization in the direction of the cue and away from other potential categories. Second, the expectations of the performance of new products will be compared to the performance of products belonging to the same category. Third, the preferences for a new product will be influenced by the consumers' expectations of a new products' performance. The design of the study was set up as follows (figure 49):

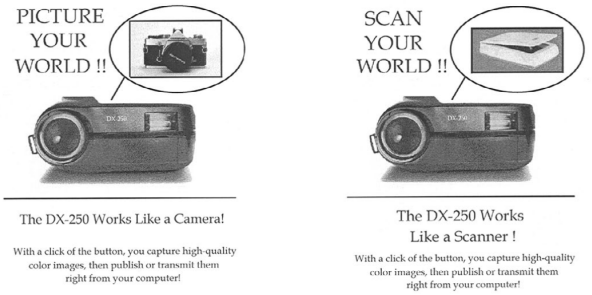


Figure 49: Categorization study, by Moreau et al. (2001)

Brand strategy position and categorization

Two main positioning strategies could be utilized when introducing a product which is somehow different from brands in a category, according to (Sujan & Bettman, 1989) (figure 50). First, the brand can be positioned as 'differentiated'. Meaning that it shares essential attributes with with alternative brands, but its better on the attributes of differentiation (Dickson & Ginter, 1987). Secondly, also based on differentiation, consists of an effort to establish an independent submarket or niche. Consequently, a brand is set apart and distinguished from the general category (Sujan & Bettman, 1989).

Sujan & Bettman (1989) conclude that a robustly discrepant brand results in a niche or subtyped position. Whereas moderately discrepant brands are perceived as differentiated within their general category.

In addition, Sujan & Bettman (1989) show that 'subtypes' are developed when a product possesses discrepant characteristics within the category. The product is then contemplated an exclusive representative of the category, holding typical and discrepant attributes at the same time. The conclusion is drawn that a subtyped position in comparison to a differentiated position is associated with enhanced memory for the distinguished attributes of the brand. Moreover, the impressions of variability among brands on the differentiating attribute are greater. Lastly, the distinguishing attribute increases in importance and therefore it influences the brand evaluation (Sujan & Bettman, 1989).

These positive conclusions of creating subtyped positioning is shared by Rise & Trout (1993). In their book 'the 22 immutable laws of marketing' they have created a law for this principle. *"The Law of the Category: If you can't be first in a category, set up a new category you can be first in."* (Rise & Trout, 1993). Furthermore, these findings are in line with Thiel & Masters (2014). According to them, it is wise to build a monopoly, creating a category in which a start-up is virtually alone. Thereby, avoiding competition all together in its early stages. Last, Trout & Ries (1986) metaphorically mention that it is better to be a big player in a small competitive field (then increase the size of the field) than to be a small player in a big field.

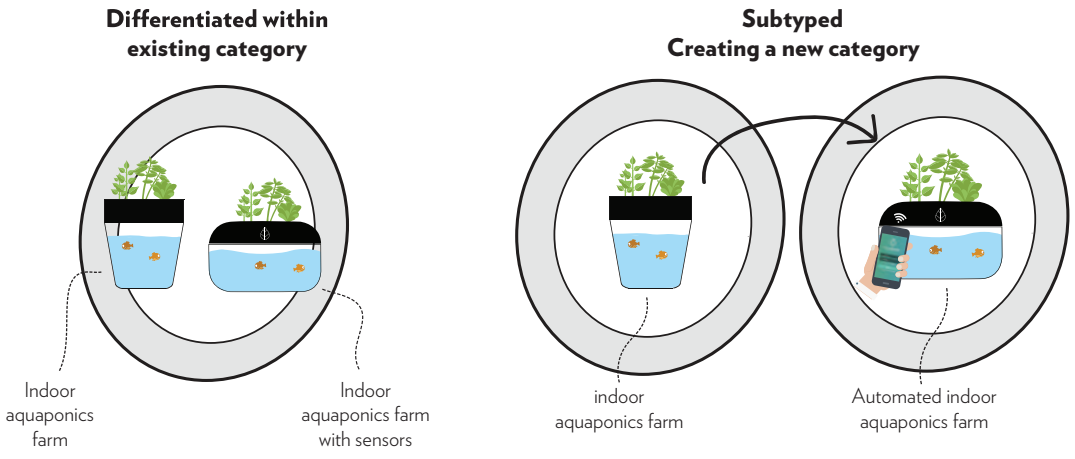


Figure 50: Differentiated or subtyped positioning

Important insights

- Categorization is an important influence on the attitude formation process, and attitudes can vary depending on how the object is categorized. While categorizing 'really new products' new knowledge structures have to be constructed. However, priming consumers by assigning a category label to the product could influence the expectations and preferences significantly. Thereby, manipulating the categorization process. Knowledge from existing categories will be transferred to unfamiliar ones by access, mapping and transfer.

Figure 51: Category steering

- While positioning a product, a 'differentiating' or 'subtyping' strategy could be applied, depending on how discrepant the differentiating attributes are communicated. Furthermore, literature points out that creating a new category by subtyping is a beneficial strategy. Therefore, the differentiating elements of the EcoGarden could be emphasized in a discrepant way. However, since the product category knowledge of aquaponics in general is very low, for most people the product will be a new category product anyway.

- Steering the categorization process could also be done by providing a context in which the product is used (e.g. kitchen, living room, desk). By assigning a product context/environment, combined with a category label, the categorization and perception can be steered significantly (figure 51).

Case study learnings

- The associations of interviewees when seeing the EcoGarden were listed during qualitative interviews and digital questionnaires. Also, the categorization of the EcoGarden was assessed. It is most often categorized as an aquarium, followed by the indoor garden. Negative associations that people have with aquariums is the high maintenance aspect.

- This characteristic was mapped on the EcoGarden after the interviewee accessed the existing category (the aquarium) and transferred knowledge. This provided us with valuable insights which are later on utilized in the marketing strategy. Almost all categories with their positive and negative associations have had consequences for the marketing strategy. The findings are used in the set-up of the social media advertisements, landing pages and the Kickstarter page. Figure 52 elaborates on the findings of this categorization research.

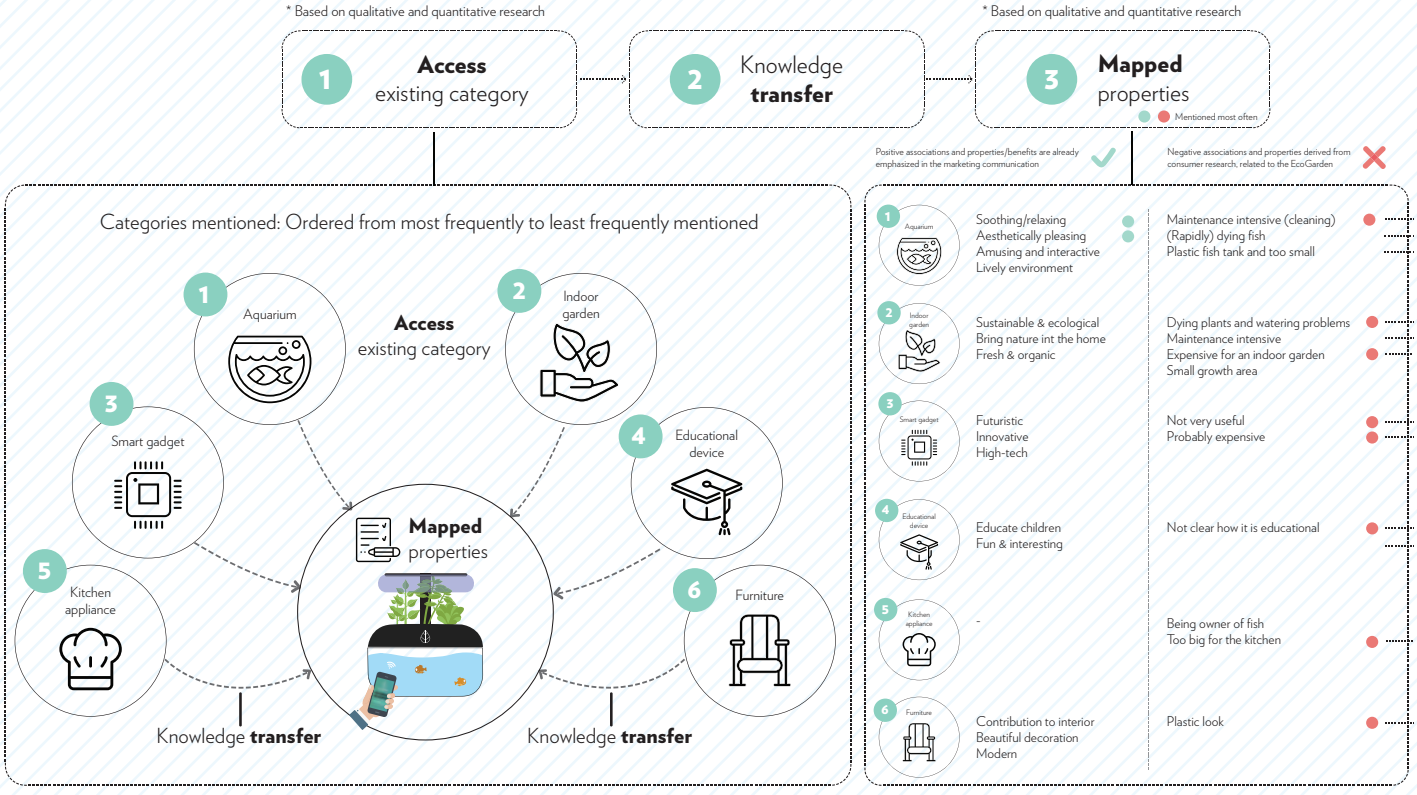


Figure 52: Category research

4.5 | Hybrid products

Hybrid products hold attributes of several product categories and therefore could be categorized differently (Rajagopal & Burnkrant, 2008). Moreover, Rajagopal & Burnkrant (2008) point out an important problem which is the 'single category belief'. This theory basically entails that when a product contains characteristics of multiple categories, they are evaluated as one preexisting category, rather than a new one. Consequently, beliefs about the objects are conformable with the selected category (Malt et al. 1995; Moreau et al. 2001). This chapter briefly investigates literature on hybrid products.

Multi category beliefs

Rajagopal & Burnkrant (2008) draw attention to methods of eliciting 'multiple category beliefs'. Psycholinguistics is used in their research as phenomenon to understand the way individuals interpret new combinations of words which are not detected before. People predominantly can interpret novel combinations with two different strategies; relational interpretations and property interpretation (Wisniewski & Love, 1998). An example of 'book magazine' is provided, where relational interpretation is posited as a magazine about books. *"Under property interpretations, a particular property or attribute of one (modifier) category maps to the second (head) category such that a book magazine is a magazine that is thick like a book."* (Rajagopal & Burnkrant, 2008). Ross & Murphy (1996) call the phenomenon of an object associated with two distinct categories 'hybridized' (for instance, a banana is fruit, but also a snack). Thereby, holding multiple category beliefs.

Ambiguous categorization

As we have seen in literature about consumer acceptance of aquaponics products that the greatest percentage of people are not acquainted with aquaponics or have never heard about it. The category 'aquaponics' will most likely not exist in most of the consumers' minds. Therefore, it is assumed that people do not directly understand the correlation between the aquarium and indoor farm. This might cause confusion and categorization ambiguity. According to Gregan-Paxton et al. (2005) categorization ambiguity exists when it is difficult to place a new product in a single, existing category. This existing category would be 'aquaponics' in the case of Ecobloom. However, it is more likely for the product to be categorized as an aquarium or indoor farm and therefore obtain single-category beliefs.

Important insights

- According to research in the field of hybrid products, it is possible to achieve multi-category beliefs by property priming. However, prior category knowledge can moderate this effect.
- The correlation between two categories should be clear to avoid confusion among consumers. Therefore, Ecobloom must always communicate the process of aquaponics in marketing efforts (figure 53).
- The ambiguous categorization process poses challenges but also opportunities. For instance, because the product does not fit into an existing category for consumers, this process could be steered towards a preferred category. from a marketing perspective. More specifically, targeted advertisements could differ per consumer segment to fit the preferred option.

Figure 53: Aquaponics explanation

4.6 | Innovation

In recent decades, technological innovations turned into an essential part of the world economy and modern life. Consequently, the forecasting of acceptance of technological innovations has become a great objective of many researchers in industry and academia (Kulviwat et al. 2009). All novel, new or different ideas, concepts or products in the world can be perceived as innovations for that time being. New products or services often require a new kind of behavior towards the product itself, towards others, towards the consumer's life or even towards the world (Awan & Zuriat-ul-Zahra, 2014). Innovations might require major or just minor behavioral changes, all depending on how incremental or radical the innovation is.

Incremental and radical innovation

Green et al. (1995) claim that innovations have been defined as either radical or incremental for over 30 years. Radical innovations bring new advantages in the perception of the consumer, and facilitate them to perform things that were not possible before. Whereas incremental innovations are built on current product offerings (Hoeffler, 2003; Zhao et al. 2009). Consequently, incremental innovations could be evaluated based on products of the same category by consumers (Schuhmacher, 2018).

Moore (2014) divides innovations in two similar categories. First, discontinuous or disruptive innovations are change sensitive. This means a product requires consumers to change existing ways of behavior or to adjust products and services that are relied upon. On the other hand, there are continuous or sustaining innovations, referring to normal product upgrades which do not require behavioral changes. Amidst continuous and discontinuous innovations stretches a continuum of necessities for behavioral change (Moore, 2014). In line with this literature, several scholars (e.g. Robertson, 1971; Ulrich & Eppinger, 2000) define two separate types of products: Really new products (RNP) are described as inventive products which specify a new product category and incremental products build on established goods.

Although radical innovations are crucial for firms' durable success, they create important challenges (Rubera et al. 2012). As mentioned before, behavioral changes and consumer learning are required to obtain the new benefits (Urban et al. 1996), as in line with the findings of Moore (2014). These changes are generally associated with high uncertainty levels, according to Lynn et al. (1996). In turn, high perceived uncertainty levels might cause consumers to postpone the adoption of radical innovations (Lettl et al. 2006). This is one of the reasons radical innovations have a higher failure rate than incremental innovations (Chiesa & Frattini, 2011).

Innovation adoption and diffusion

Literature about innovation has been distinguished in two main components to serve the thesis' purpose better; innovation adoption (individual or organizational level) and innovation diffusion (system level).

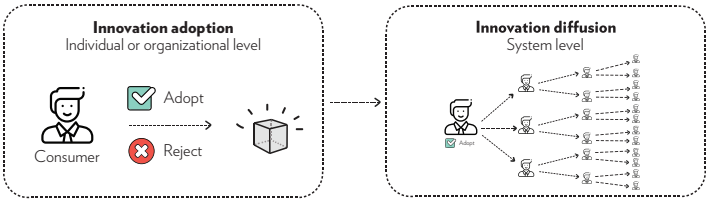


Figure 54: Innovation adoption and diffusion

Rogers (2003) divided consumers in adopter categories as *"the classification of members of a social system on the basis of innovativeness."* As shown in figure 55, it consists of innovators, early adopters, early majority, late majority and laggards. People within the categories are similar in terms of their innovativeness, which entails the extent to which a person is relatively quicker in accepting novel ideas than different associates of a system (Rogers, 2003). Innovativeness is described by Braak (2001) as the willingness of individuals to alter existing routines. This value is rather stable, socially-constructed and innovation-dependent.

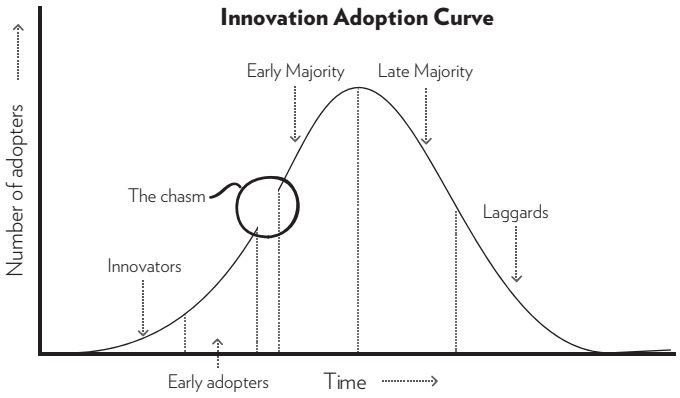


Figure 55: Innovation adoption curve, by Rogers (2003)

Rogers (2003) describes the adoption as the choice of an organization or individual to make use of an innovation. In order to create an innovation which could be adopted easily, multiple aspects have to be kept in mind. Rogers (2003) discusses the innovation adoption process and mentions five important attributes which influence the adoption significantly. The fluctuation in the adoption rate is explained for 49 to 87 percent by the five main attributes (Rogers, 1995). The attributes and their description are adopted from Rogers (2003):
- Relative advantage is the extent to which an idea is recognized as being better than the product it is compared to.
- Complexity is the perceived difficulty to comprehend and make use of an innovation. As to be expected, complexity is negatively related to the pace of acceptance.
- Compatibility is the degree of perceived consistency between an individual's existing values, beliefs, needs, experiences and an innovation.
- Trialability stands for the level to which consumers can implement and try an innovation small scale.
- Observability is the extent to which the outcomes of a certain innovation are detectable to other people. Easily observed results tend to innovations that are adopted faster than those with subtler results.

Additional adoption attributes

Kapoor et al. (2014) reviewed and synthesized the literature for innovation adoption attributes. They filtered relevant research findings from articles between 1996-2011. The most important and significant attributes in addition to Rogers' findings are summed up below:
- Costs: Costs have a significant negative impact, according to Tornatzky & Klein (1982). They claim that high perceived costs could create an adoption barrier. Many other scholars have confirmed this significant, negative impact (e.g. Zhu et al. 2006; Ungan, 2004).
- Ease of operation: The second additional adoption attribute is the ease of operation. According to Fred (1986) it is the degree to which an individual believes that making use of a system is without mental and physical effort. It is basically the opposite from complexity (Teo & Lim, 1996), and corresponds with perceived ease of use (Kapoor et al. 2014).
- Riskiness: It is concluded by Kapoor et al. (2014) that the adoption intention is higher when the associated risks of an innovation are lower. Jakoby & Kaplan (1972) break down risk into six components, demonstrating its multidimensionality. The components are; social risk, physical risk, performance risk, financial risk, psychological risk and risk of time loss.
- Visibility: The visibility has a positive significant effect on innovation adoption (Kapoor et al. 2014). Slyke et al. (2005) characterize this aspect as the level to which using certain innovations is apparent.
- Image (status): Image is described by Moore & Benbasat (1991) as the perceived enhancement of an individuals' image or status in one's social system after adopting an innovation. Kapoor et al. (2014) mention that it has a positive and significant effect on the adoption and use intention. This attribute is in line with social approval, which refers to the gained status from the individuals' reference group and could be perceived as a nonfinancial reward (Fliegel et al. 1968).

While optimizing the innovation adoption and intention to use, these attributes have to be taken into account to optimize the consumer acceptance. Figure 56 illustrates the context of this process. The attributes can either be negatively correlated or positively.

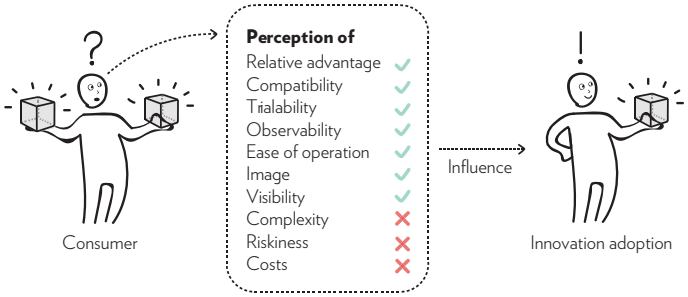


Figure 56: Innovation adoption attributes, by Rogers (2003) and synthesis of Kapoor et al. (2014)

Besides the attributes which influence the rate of adoption, Rogers (2003) defined other variables which play a role in estimating the speed of adoption. One of which is the type of innovation decision. Three types are distinguished, namely: An optional innovation-decision is made independently by an individual. Whereas a collective decision is made by approval of individuals within a social system. Last, authority innovation-decisions are established by few individuals with status, power or technical expertise (Rogers, 2003).

Furthermore, the communication channels in a social system influence the innovation adoption rate (Rogers, 2003). This element will be explained later on. Next, the nature of the social system with i.e. its standards and degree of interconnectedness. This interconnectedness refers to the extent to which members of a social system are connected by networks which are interpersonal. Last, the extent of change agents' promotion efforts partly determines the adoption speed. Change agents are characterized by being a communication link between a client system and a resource system with expertise. For instance, development workers, salespeople, teachers, consultants could be defined as change agents. Facilitation of the flow of innovations is considered the main role of a change agent (Rogers, 2003) (figure 57).

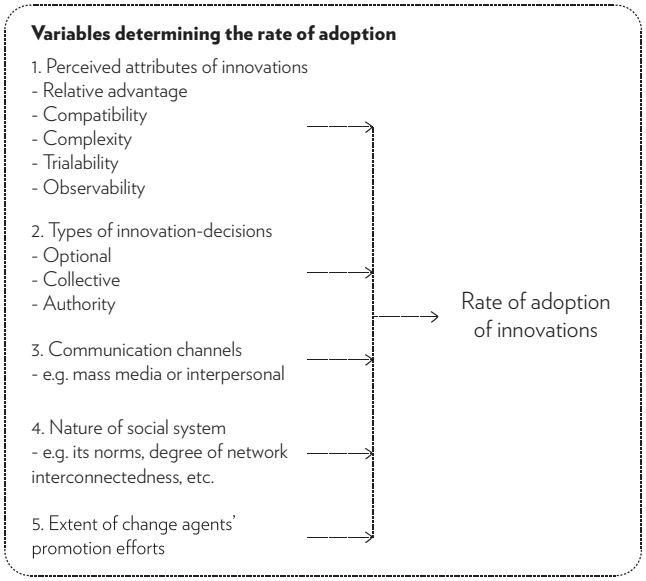


Figure 57: Innovation adoption variables, by Rogers (2003)

'The chasm'

Building further upon the results of Rogers (2003), Moore (2014) introduced the book 'crossing the chasm'. According to Moore (2014) the greatest danger while developing a high-tech product is to be found in realizing the shift from an early market to a mainstream one. The early market is often prevailed by few visionary consumers, whereas the mainstream market consists mainly of consumers pragmatic in orientation. Moore (2014) concludes by emphasizing the significant importance of the gap between the two markets, calling it a chasm. Crossing this chasm must be a top priority in long-term high-tech marketing plans.

Moore (2014) claims with his research that the reason behind the chasm is a large difference in motivation to adopt an innovation between the early adopter and early majority. Early adopters expect to get a head start on competitors, for instance through enhanced customer service, lower product costs, or other business advantages. A profound discontinuity is expected between the former and new ways, which means they are prepared to experience glitches and bugs which almost any innovation brought to market contains. At the contrary, the motivation for the early majority is mainly to purchase a productivity advancement for current activities.

Minimizing discontinuity with old ways is being sought after. They want evolution, not revolution and by the time the innovation is adopted, it needs to work decently. Last, the innovation needs to blend properly with the current technology base the consumer possesses (Moore, 2014).

This transition from early adopters to early majority creates a catch-22. Early adopters are not an appropriate reference for the early majority, because they buy innovations with different intentions and motivations. However, favorable references have a crucial influence on the buying decision of the early majority, because they do not want to put off current organizations (Moore, 2014). The characteristics and motivations per group are visualized in figure 58 to gain a deeper understanding in the motives and behavior. Consequently, this knowledge can be used in the study of innovation diffusion. The information in the figure is cited from Moore (2014).

Innovation diffusion

In the context of the thesis, innovation diffusion is basically scaling-up an innovation within society. A product or service spreads through social systems, and thereby expanding its use and increasing its volume. Innovation diffusion at its core is the *"process of communicating an innovation over time, through certain channels, amongst the members of a social system"* (Rogers, 2003). Communication in this context refers to the process in which mutual understanding is established amongst individuals by creating and sharing information (Rogers, 2003). Diffusion could be considered as a social change, characterized by adjustments in the function and structure of a social system. Novel products are either rejected or adopted by individuals, and diffused amongst society, creating consequences and social change (Rogers, 2003). Appendix 3 explores innovation diffusion more in depth.

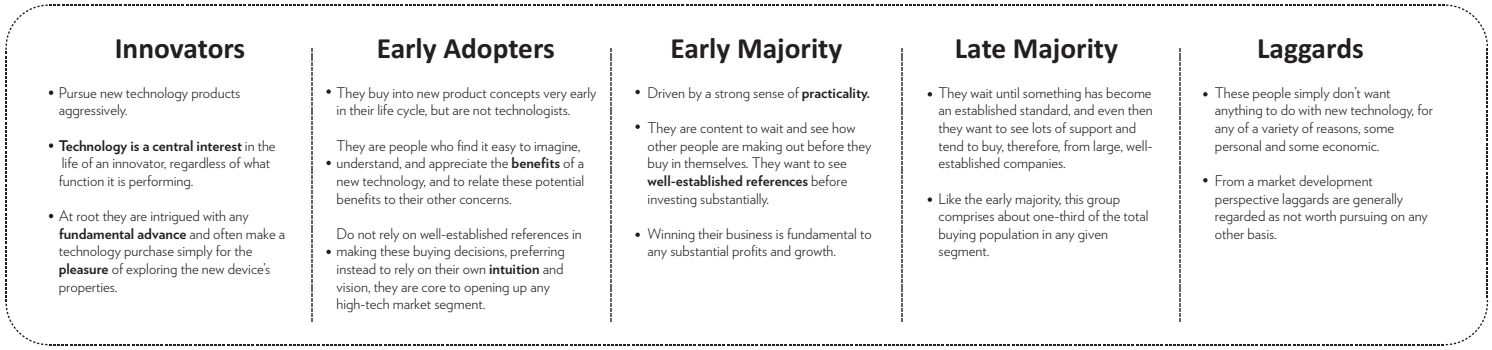


Figure 58: Characteristics of consumer innovativeness segments, cited from Moore (2014)

Important insights

- Radical innovations give new advantages in the perception of the consumer, and enable them to perform new things which were not possible before. Whereas incremental innovations are built more on current products (Zhao et al. 2009; Hoeffler, 2003). Innovations might require major or just minor behavioral changes, all depending on how incremental or radical the innovation is. Big changes are generally associated with high uncertainty levels, according to Lynn et al. (1996). In turn, high perceived uncertainty levels might cause consumers to postpone the adoption of radical innovations (Lettl et al. 2006).
- The radicalness of an innovation depends on the perception of the consumer. Is it something close to what people were already used to or gives it totally new benefits and functionalities? How much consumer learning and behavioral changes are required?
- This perceived radicalness is in line with adoption attribute compatibility, how well does the product fit the current values, beliefs and needs? How much change is required in the current lifestyle?
- Rogers (2003) and Kapoor et al. (2014) have built a decent base in formulating the most important attributes within the field of innovation adoption. The perception of the most relevant and significant attributes should be assessed and if possible, positively influenced. Advertisements/stimuli should take the attributes into account and emphasize the most important ones per segment (e.g. low perceived complexity for segment X).
- Not only the adoption attributes play an important role, other determinants do as well. The communication channels, innovation decision, nature of the social system and the extent of change agents' promotion efforts should be carefully considered.

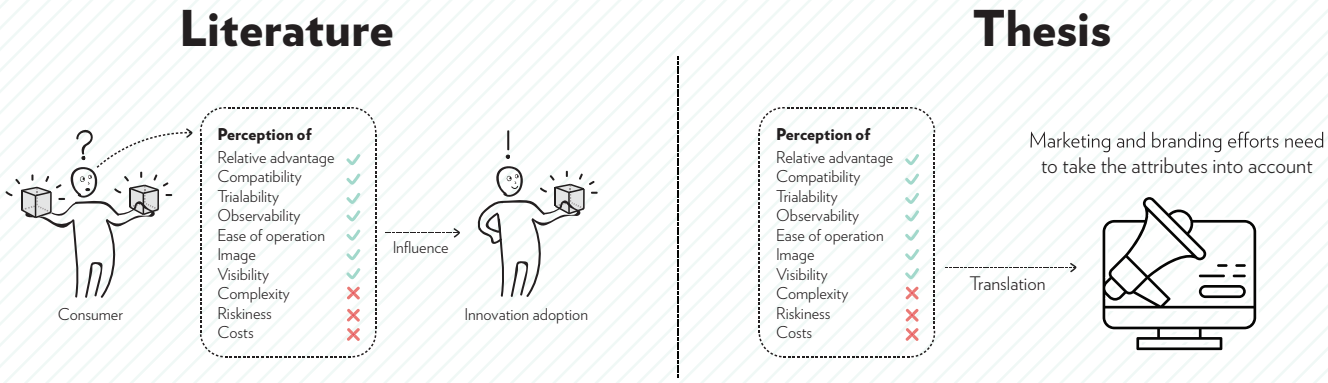


Figure 59: Innovation adoption attributes and their marketing application

- The motivations and characteristics per adoption group as defined by Moore (2014) provide relevant data on how to target the segments most effectively.
- Rogers (2003) states that mass media channels are more important within the knowledge stage, whereas interpersonal channels are of greater importance at the persuasion phase within the innovation-decision process.
- To establish a tipping point, strategic steps need to be undertaken. As mentioned by Gladwell (2002) three crucial factors play an important role. The law of the few, the stickiness factor and the power of context.
- To optimize the innovation diffusion, opinion leaders are often utilized to spread a product/service rapidly throughout their social system, because they have the ability to influence the attitude of other individuals.

4.7 | Market segmentation

In order to optimize the rate of adoption of an innovation, the market needs to be effectively segmented to create most impact. The intended attitude should be established among consumers in different market segments. Therefore, this section is dedicated to methods of segmenting the market and which method is considered most useful for start-ups to use in their early stages. In it's essence, market segmentation is identifying and grouping target consumers into segments with e.g. similar buying characteristics and requirements (Dibb & Simkin, 1991). From the perspective of consumer behavior, market segmentation is about grouping society in segments that will behave homogeneously in response to marketing efforts. This way, specific marketing communication efforts could be targeted at specific segments.

Segmentation, targeting, positioning

A widely used technique is called STP (Kotler, 1988) this process of segmentation consists of three components: Segmentation, targeting and positioning. First, segmentation aims to define consumer groups defined in several variables (e.g. lifestyle, geographic area, attitude, demographics) which have a differential reaction to marketing control variables (Wind, 1978). By doing so, a company can customize marketing activities more precisely and aimed at the individual customers' preferences (Camilleri, 2018). In addition, Camilleri (2018) claims that marketers have moved away from mass marketing actions, consequently smaller segments with customized marketing programs increasingly gain traction. Davies & Brooks (1989) mention it is crucial that the impact on selected segments is great and well defined.

Second, when the market is appropriately segmented, decisions about how many and which customer segments to target can be constructed (Dibb et al. 1990). For instance, (1) concentrating on a single segment with one product/retail brand, (2) offer a single product/retail brand to various segments, (3) addressing a number of segments with a different product/retail brand. Dibb & Simkin (1991) mention that companies must take into account resource implications that certain strategies involve. Third, positioning refers to the 'sharp end' for marketers, which means the product's image compared to its competitors as perceived by the customer (Trout & Ries, 1986). Wind (1980) describes positioning as the place a product offering captures in a specific market, in the perception of relevant consumers.

A positioning is based on variables which are important to the customers and are within certain parameters. Essentially, these variables and parameters are selected by the customers (Dibb & Simkin, 1991) (figure 60).

Wedel & Kamakura (2012) point out that market segmentation is only useful if the *"effectiveness, efficiency and manageability of marketing activity are influenced substantially by discerning separate homogeneous groups of customers."* Changes in the market environment have lead to new opportunities and challenges for market segmentation. For instance, advancements in information technology provides marketers with rich information about consumers and their actual behavior. Consequently, marketers now sharpen the focus on smaller segments with direct approaches and micro marketing (Wedel & Kamakura, 2012). The segmentation concept consists of six crucial criteria. These criteria have been frequently mentioned by assessing the profitability and effectiveness of marketing strategies (e.g. Frank et al. 1972; Loudon & Della Bitta, 1984; Kotler, 1988).

Opportunities in market segmentation

Companies face the decision of how and where in targeted segments to aim their product(s) or brand(s) (Dibb & Simkon, 1991). According to Kotler (1988) a challenge is to translate customers' wants and needs into a concrete mix of product, price, promotion, distribution and service levels with optimized attractiveness.

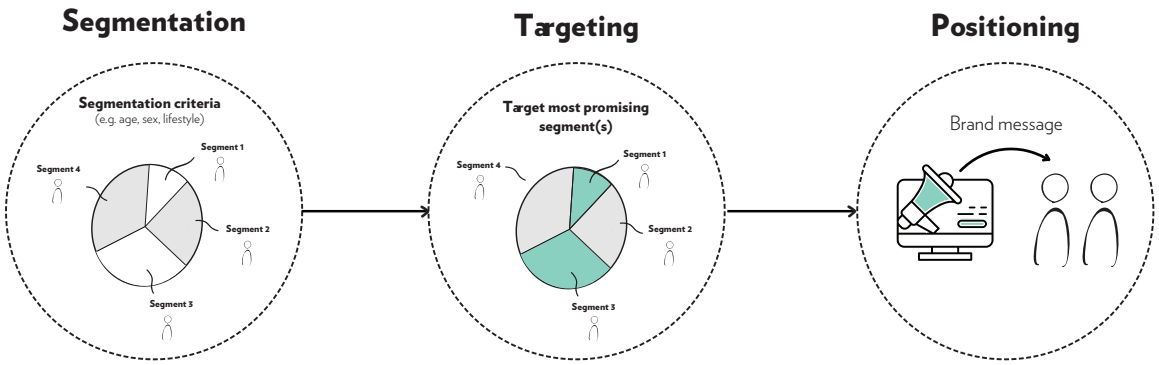


Figure 60: Common STP technique, by Kotler (1988)

As mentioned in the section of consumer behavior, consumers buy and consume products to achieve consequences and values (Gutman, 1982). The means-end chain theory is considered highly relevant in the application of market segmentation. As stated by Reynolds & Gutman (1988) the method is applicable to segment consumers *"with respect to their values orientations for a product class or brand."*

Moreover, it is considered a foundation for creating advertising strategies (Reynolds & Gutman, 1988). In addition, the means-end chain theory touches upon the conventional segmentation criteria 'benefits sought', 'attitude to project', but also personality, motives and lifestyle of consumers, as defined by Dibb & Simkin (1991). To explore this methodology more in-depth, the following section is dedicated to it.

Important insights

- Values are powerful forces in governing individuals' behavior in all facets of their lives. Segmenting the market on perceived benefits and values is proven to be an effective method by several scholars.

- Society should be grouped in segments that behave homogeneously in response to marketing efforts. As we know from innovation adoption literature mass media channels like social media is relevant to (1) approach a great audience quickly, (2) creating and spreading information, (3) influence weak attitudes. In addition, several expert interviews pointed out that social media advertisements in combination with landing pages are a viable method to assess market potential, but also test the marketing response amongst society for segmentation purposes.

- The means-end chain method (Gutman, 1982) provides insight into product attributes, the consequences and benefits these attribute cause and finally to what perceived values those lead. Because the proposition of Ecobloom contains many different ladders, this method is considered highly useful. Scholars have acknowledged the potential of means-end chain to analyze and segment the market and to design effective promotional strategies. Therefore, it will be further examined.

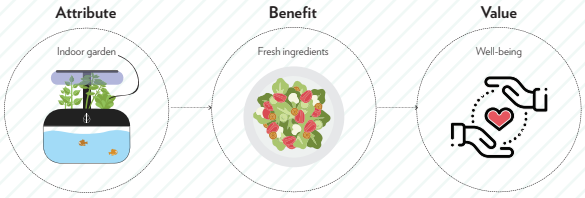


Figure 61: Means-end chain ladder,

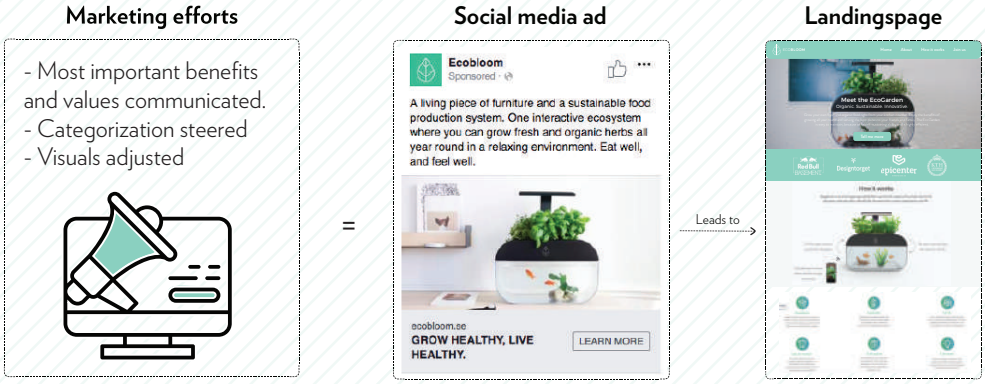


Figure 62: Segmentation based on marketing response

- Another interesting market segmentation opportunity is to turn the conventional STP process around. Starting with several positioning statements which are being sent to all potential consumer segments. Hereafter, the market could be segmented based on marketing response (figure 63).

Figure 63: Turning the STP process around

- The means-end chain method can be used as valuable source of consumer research input. Figure 64 shows this type of consumer research in relation to the overall thesis.

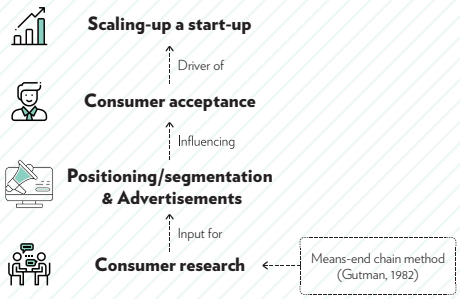


Figure 64: Means-end chain in context

4.8 | Positioning

According to Porter (1996) 'positioning' was once the center of strategy. However, nowadays it is rejected as too static for the rapidly changing technologies and dynamic markets. Strategic positioning is defined as 'performing different activities from rivals' or performing similar activities in different ways' (Porter, 1996). This section briefly explores literature and expert opinion on positioning. The main objective is to examine the possibilities of positioning a product in several ways to appeal optimal to different consumer segments. Thereby, contributing to research objective 1bii.

Brand positioning

Brand positioning is an established phenomenon in literature. It basically refers to the place that a brand occupies in the mind of the consumer. Also, it takes into account how it is distinguished from competitors (Trout & Ries, 1986). It is critical that a firm's brand DNA is aligned with its product portfolio. Evoking the intended brand associations amongst customers through product offerings can be perceived as a tough managerial task. Figure 65 shows the interplay between brand positioning and product positioning on a perceptual map. Brands distinguish themselves from competitors on different dimensions. A product/service and its features and benefits contribute to the distinctiveness and consequently, the positioning of a brand.

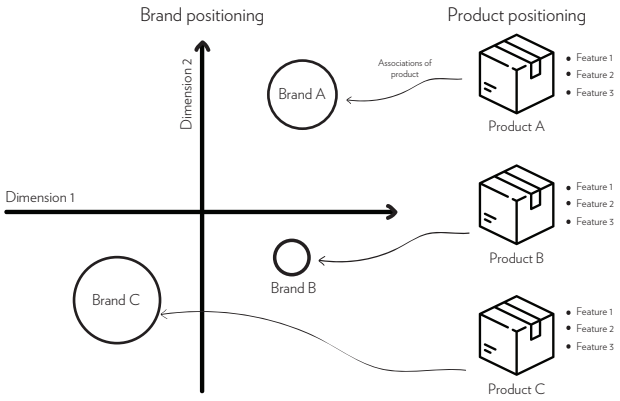


Figure 65: Brand- and product positioning

Product positioning

Aaker & Shansby (1982) point out that the word 'position' in positioning implies a frame of reference. A reference point which is mostly used is the competition. Camilleri (2018) claims that effective product positions hold four critical characteristics. First, the benefits for potential consumers should be central and the product positioning built around it. Second, the product or service differentiates from key competitors. Third, resources, relevant skills and credibility need to be in possession to deliver on implied promises and statements. Fourth, successful positioning strategies need to be defensible to sustain competitive advantage (Camilleri, 2018). A variety of positioning strategies is available to the advertiser. According to Aaker & Shansby (1982), an object can be positioned: by application, by product user, by attributes, by price/quality, by competitor, or by product class. Also, a combination of positioning dimensions could be chosen.

Perceptual maps

To measure and evaluate whether the company's intentions and customers' perceptions are aligned, perceptual mapping techniques are often used. According to Kohli & Leuthesser (1993), each brand occupies a specific position in the *"perceptual space"* of consumers. Perceptual mapping is a technique to represent the product space graphically. They can serve multiple purposes, but one important goal is to help identify attributes of products that are decisive in influencing customer evaluation for a certain product class (Kohli & Leuthesser, 1993).

In the identification process of the competitors; Aaker & Shansby (1982) define competitors for e.g. diet coke in a number of ways:

a. Other diet coke drinks
b. All cola drinks
c. All soft drinks
d. Nonalcoholic beverages
e. All beverages

However, Christensen et al. (2007) take a different stance at competition. Their research focuses on competition that fulfils the same job. From their perspective, the consumer *'has a job to be done and is seeking to "hire" the best product or service to do it.'* The problem with solely focusing on the needs of customers is that those needs are static. However, the customer demands different things at different times, incorporating a dynamic dimension. For the example of mapping competition, if the job is to satisfy the need for enjoyment during a movie, the coke can suddenly compete with snacks (figure 66).

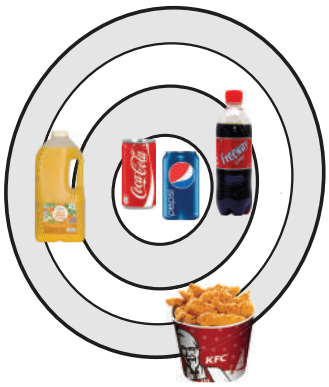


Figure 66: Dimensions of competition, according to Christensen et al. (2007)

Important insights

- According to Christensen (2007) the competition are not only the direct and obvious products and services, but everything that 'does the same job'. Thus, competition occurs on different dimensions. For instance, the EcoGarden competes with aquaponics product, aquariums and indoor gardens, but also with high-tech gadgets or even furniture, depending on how the product is categorized. By mapping the different competitive fields based on categories, the understanding of competition is increased (figure 67).

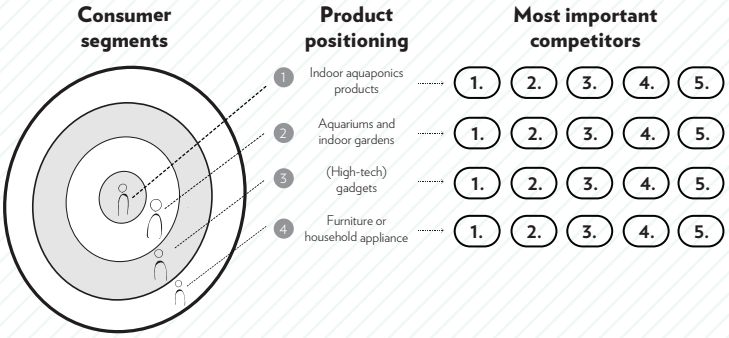


Figure 67: Competition on different levels

- Establishing the intended brand image in the consumer's mind could be done through communicating carefully created visuals and texts. Ecobloom has the opportunity to create several product positioning possibilities with different visuals and words to resonate best with specific consumer segments. Figure 68 on the right shows the first initial ideas how to do this. In this case, positioning the product by application or category. However, it is of outmost importance that the product positioning statements are aligned with the overall brand positioning.

Figure 68: Initial ideation stimuli design

4.9 | Go-to-market

Literature about go-to-market strategies is considered highly relevant for the thesis. Schuhmacher et al. (2018) point out that radical innovations may be negatively correlated with consumer adoption, as a result of the great perception of uncertainty (Lettl et al. 2006). Therefore, for companies to conquer the uncertainty of their customers a fitting go-to-market strategy should be established to favorably impact the innovation adoption. The significant relation between the targeted customer segments and a fitting go-to-market strategy has been proven by Gatignon & Robertson (1985). The research of Schuhmacher et al. (2018) examines traditional marketing mix elements (promotion, price, product, place) and their influence on innovation adoption. The marketing mix elements serve as 'information signals'. Kotler (1988) stresses the challenge to translate customers' wants and needs into a concrete mix of marketing elements with optimized attractiveness.

Consumer innovativeness

It is known that consumers respond dissimilar to incongruities and uncertainties surrounding innovations (Rogers, 2003). According to Gielens & Steenkamp (2007) consumer innovativeness (CI) explains much of the difference in adoption responses. Literature shows that domain specific innovativeness is an outstanding forecaster of adoption behavior (e.g. Kaushik & Rahman, 2014; Bartels & Reinders, 2011). Therefore, the research of Schuhmacher et al. (2018) proposes that a go-to-market strategy needs to rely upon the CI of targeted customers when introducing a radical innovation. This in line with the findings of Mahajan et al. (1990) and Rogers (2003). According to Rogers (2003), highly innovative customers should adopt an innovation first, hereafter the innovation could diffuse effectively. Furthermore, it is posited by Bass (1969) and Rogers (2003) that firms should start with targeting the most innovative consumers and hereafter the less innovative consumers. In contrast are studies of Mahajan & Muller (1998) and Moore (2014) which suggest that the targeted consumers at the time of launch do not necessarily need to be high CI consumers. Instead, less innovative consumers could be targeted first.

Early market versus majority market

Moore (2014) has also recognized the existence of a market with early adopters and a late majority market. He argues that the market transition from the early market to the majority market demands a significant change in communication and product strategy. Mahajan & Muller (1998) created a two-stage game model in which situations are provided that favor targeting the majority rather than the early market at time of launch. For instance, when (1) the effect of the innovators on the majority has a fast decline (2) the product is a consumer product (3) there is a relatively low ratio of innovators to majority (4) the new product has a slow rate of market acceptance.

The research done by Schuhmacher et al. (2018) present guidelines for when launching a radical or incremental innovation to the early market or majority market: First, when an incremental innovation is introduced, an entire market could be addressed with the same strategy, which is a benefit-based message, low price and established brand name. Second, if a radical innovation requires support of the early market to guarantee success, a firm should signal exclusive innovativeness (e.g. feature-based message, high launch price, and exclusive distribution). Third, if a launched radical innovation is aimed at the majority market, a firm should signal security (e.g. benefit-based message, low launch price and intensive distribution).

Important insights

- The 'radicalness' of an innovation depends on the perception of the consumer. Thus, what might be perceived as radical for one segment, could be perceived as incremental for others. Therefore, CI should be carefully considered as variable to segment the market. The promotion could differ per consumer segment. For instance, feature-based messages could be sent to innovative consumers, whereas more benefit-based messages can be sent to less innovative consumers.
- The perception of the price will greatly depend on the promotional efforts and the way the product is communicated. Also, it depends on how the EcoGarden is categorized by the consumer. This categorization will steer price comparison with competitors in different layers as mentioned in the previous chapter.
- Go-to-market strategy entails the traditional marketing mix (price, promotion, product, place) and these elements are considered 'information signals'. With these information signals, a brand positioning is basically established. This positioning should encourage certain consumer segments to adopt an innovation.

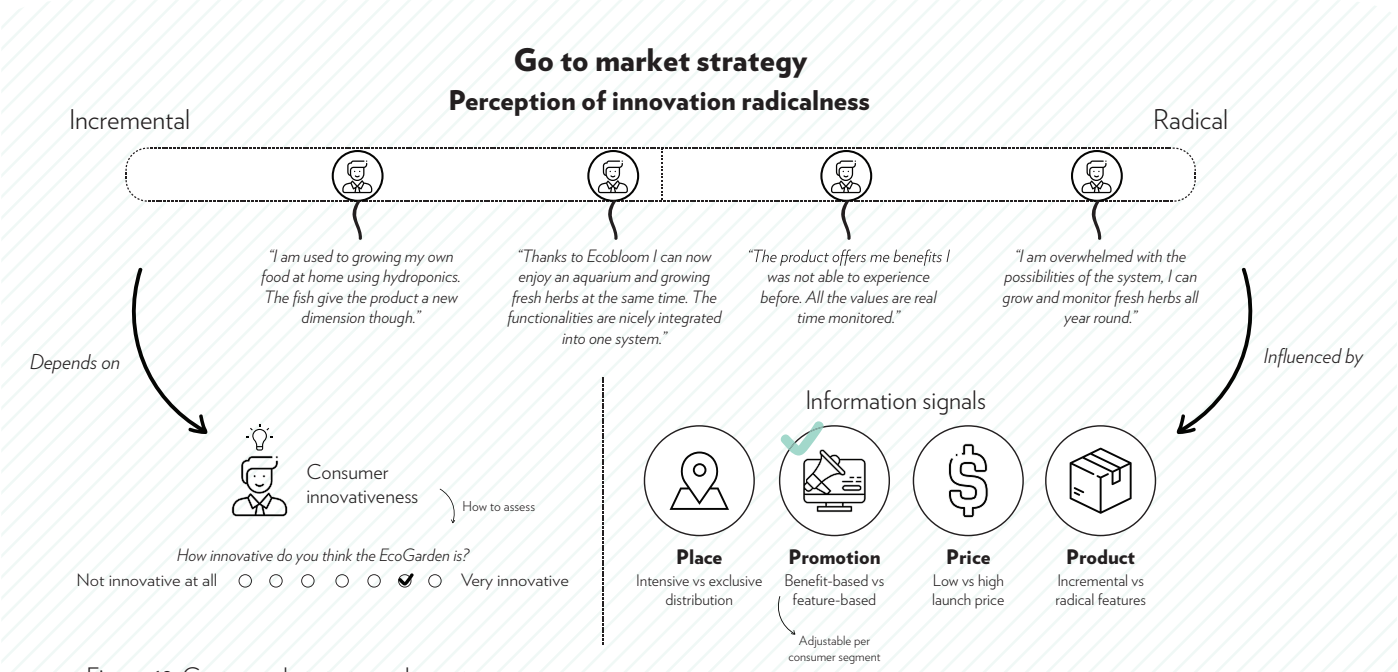


Figure 69: Go-to-market strategy elements

4.10 | Expert interviews

To strengthen the thesis' validity, but also originality, several experts were interviewed. Results and findings of the interviews have been merged with the initial literature research phase. This specific section addresses information that sheds light on other highly useful insights to scale start-ups.

Lean scaling-up process

This process is adopted from Innovation Booster and used by many start-ups and larger firms. For the thesis' relevancy, it starts at the stage in which consumer needs are found on a small-scale and need to be validated quantitatively. First, the target audiences are determined which are most likely to possess the need for the proposition concerned. These needs are translated into a Facebook/Instagram or LinkedIn advertisement (MVP), which consists of a visual and a textual explanation. To assess the highest click-through rate, several advertisements run with different attributes emphasized.

Once the most effective advertisement is found (the one with the highest click through rate), the most effective landingspage is assessed. Again, the formulation and emphasis of attributes is different per design. The landingspage with the highest conversion rate is chosen to use for greater scale. Ultimately, the main aim is to convert consumers, which means they 'pre-order' the proposed solution or sign-up to receive updates about the progress. It basically tries to measure the adoption intention or purchase intention of consumers. In figure 70 this process is visualized.

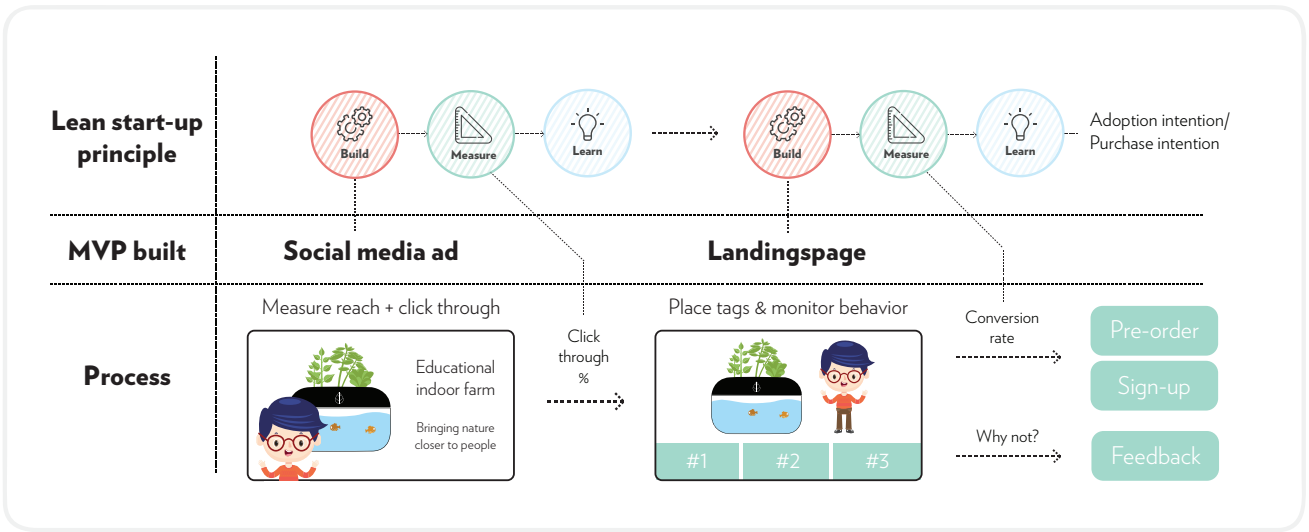


Figure 70: The process of quantitative proposition validation

Further scaling-up process

Once the stimuli and MVP's have been optimized, it is time to quantify on a greater scale. It is essential to find a scalable and sustainable business model before growing market share and formalizing business. Often times, the acceptance is not generalizable across different contexts or e.g. countries. Therefore, scaling-up in small and iterative steps is the most efficient way to move forward.

Within each stage of scale assessment (figure 71), the Build-Measure-Learn loop from Ries (2011) is utilized to keep the process lean and efficient. Again, MVP's are built to validate consumer acceptance. A crucial aspect in this framework are the stage gates moments which assess the desirability, viability, and feasibility in between the scaling stages. These must be determined before the MVP's are used, to avoid continuing to the next stage while the results are suboptimal. Successful scaling-up entails constantly validating the market before taking next steps. This prevents risky investments upfront and provides more security by understanding the consumer needs.

Bruseberg & McDonagh-Philp (2002) claim that designers frequently have insufficient information about the user needs. This method provides support that the consumer needs are understood well. Moreover, several researchers point out that an important determinant of new product success actually is the understanding of user needs (e.g. Callahan & Lasry, 2004; Gruner & Homburg, 2000; Ottum & Moore, 1997).

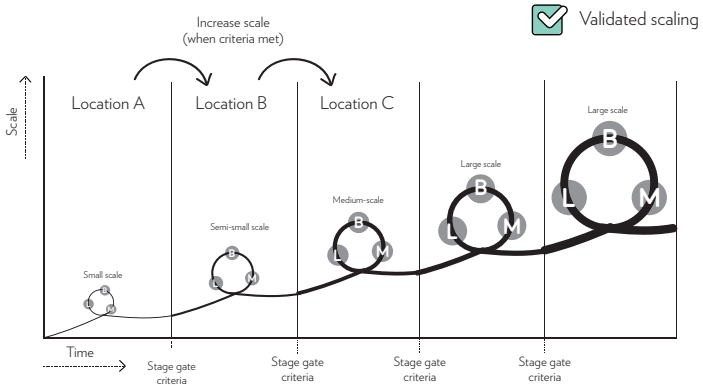


Figure 71: Scaling in an iterative and validated manner

Important insights

- The methodology looks for a 'one size fits all' approach, in which the best performing ad and landing pages are chosen to use on greater scale. However, all potential consumers might value different attributes, consequences or values of the proposition. Therefore, to optimize the adoption and purchase intention further, several ads could be run simultaneously targeting different segments with e.g. different emphasized product consequences.

- The methodology mainly focuses on the attribute or sometimes the consequence level of the proposition. However, also communicating the ultimate value of the means-end chain is a more powerful element.

- The market potential could be measured relatively easily and cheaply. It provides strong evidence whether or not the proposition is ready to scale-up. By using the build-measure-learn loop, the process is very fast and it provides valuable insights. Moreover, by measuring the actual pre-orders or sign-ups, a real-life scenario could be imitated accurately. Instead of measuring an attitude, an actual behavioral intent is measured.

- The consumer acceptance of scalable products/services should be generalizable across contexts (e.g. countries or locations). The validated scaling framework carefully scales business in a validated and rational, yet fast and iterative manner. Highly strategic considerations are involved in the decision to which location to expand to.

- The stage gate criteria (desirability, viability, feasibility) should be determined before the MVP is launched and functions as quality control mechanism. The stage-gate assessments result in a persevere, pivot or stop decision. If a pivot is necessary, certain variables could be strategically adjusted (e.g. lower price) (figure 72).

Conclusions of the stage gate assessment

Persevere → The criteria are met and the market potential looks promising.

Pivot → Reconsider e.g. market segments, stimuli design etc. and set new criteria.

Feedback → Add 'Feedback' button to gain qualitative insights.

Determine variables that can be adjusted in order to make the next assessment successful. Thereby, reaching the objectives.

- Positioning (category, application)
- Stimuli (e.g. context of picture, visual elements)
- Price and discounts
- Age, gender, etc.
- Segmentation filters
- Channels (FB, Instagram, LinkedIn)
- Call to action (Pre-order or sign-up button)
- Budget of campaign
- Overall tone, message and feel

Stop → After several pivots, the effect does not show to have enough potential.

Figure 72: Stage gate assessments

5 | Synthesis & design

The diverging research phase, consisting of literature review and expert interviews have lead to important input for the development of the strategic frameworks. This chapter introduces the long- and short-term organizational frameworks and the proposition framework.

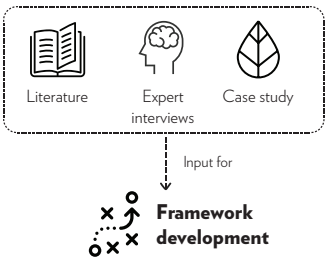


Figure 73: Framework development

5.1 Organizational scaling (long-term)

Foundation

The long-term organizational framework rests on important theories from several scholars. First, a vision needs to be defined which provides direction, the 'why' of the organization. The long-term focus contains large, bold decisions along the way towards the vision. Entrepreneurs tend to behave proactive, flexible, thrive in uncertainty and evaluate proposals often judgmental (Mintzberg, 1973).

The theory of effectuation by Sarasvathy (2011) rests on the central thought of uniquely combining core capabilities, resources and aspirations to construct value, creating 'effects'. Effects stand for the propositions which start-ups can bring to the market. These effects are directed by the vision of the entrepreneur(s) and may have no charted plan of organization (Mintzberg, 1973). The long-term view is stressed, where several 'effects' enable a start-up to reach its vision. The criteria of which effect to pursue contains considerations of affordable loss and acceptable risk. It is a means-driven approach that suits the entrepreneurial context.

The timeline with three horizons indicate a changing external environment where start-ups need to construct value that aligns with political, cultural, economical and technological developments (Curry & Hodgson, 2008). Thereby, defining what role they aim to play in the (future) landscape. To stay relevant over time, a continuous exploration is required where the abovementioned aspects are taken into consideration. It is important for start-ups to have systems in place which execute this constant exploration. Within the chapter 'Implementation and evaluation' Ecobloom's approach is explained.

Merging these theories results in the illustration on the right. A start-up should possess a strong sense of knowing why they do what they do. According to Sinek (2011) the purpose, cause or believe has nothing to do with what a company does or how it operates, it is something deeper. The 'how' refers to the utilization of resources in order to pursue the vision, according to the theory of Sarasvathy (2001) these are the 'means'. The 'what' are the actual products/services (effects) offered by a start-up. Before choosing the 'what', a clear sense of understanding the 'why' and 'how' are crucial in order to make the right decisions (figure 74). In addition, Franzen & Van Den Berg (2002) point out that this long-term vision is required to make crucial decisions which direct doing the right activities.

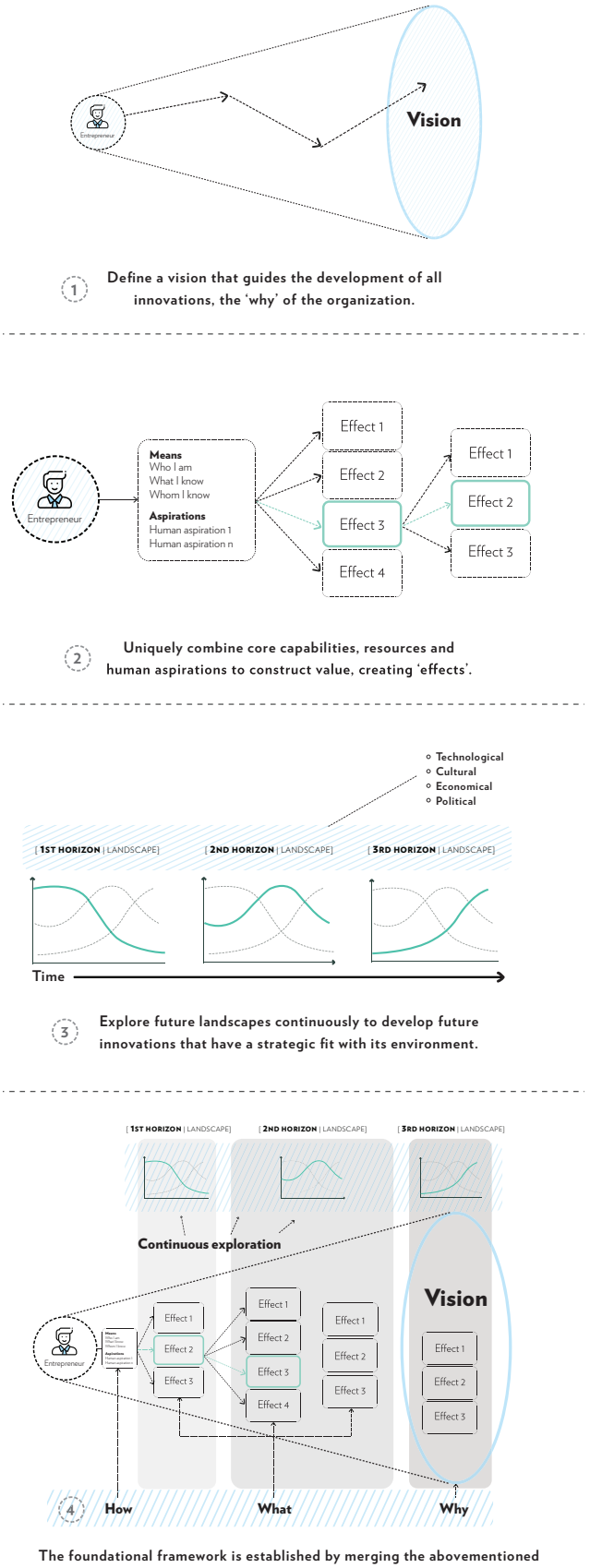
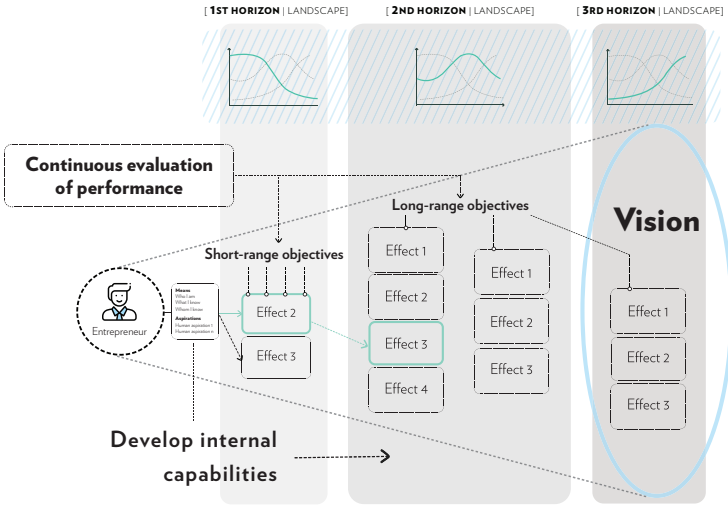


Figure 74: Building the initial framework

As proposed by Hitt et al. (2009), a strategic plan contains defined short- and long-range objectives which need to be evaluated continuously (figure 75). These objectives help to increase focus and guide the development of the internal capabilities. For instance, at Ecobloom we have decided upon ambitious objectives and deadlines for the product development and mobile application. However, to realize these objectives our internal capabilities needed to be developed. More specifically, we needed to recruit a designer and developer with the right knowledge and skills to perform the tasks. Thereby developing the internal capabilities not only for the current product, but also to increase impact with future products. Other objectives are e.g. related to our community growth and the amount of subscribers. To reach these objectives, knowledge and expertise has been acquired through the consultation of a marketing manager.

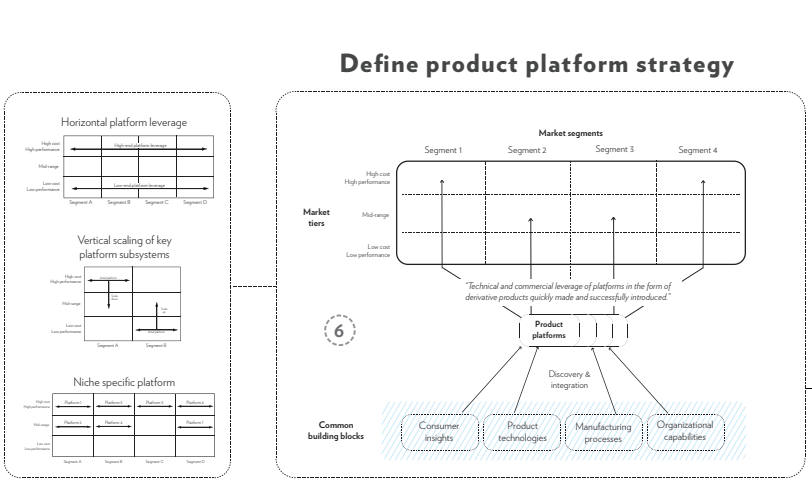


5 **Establish short- and long-range objectives and continuously evaluate the performance. Simultaneously develop the internal capabilities to reach objectives.**

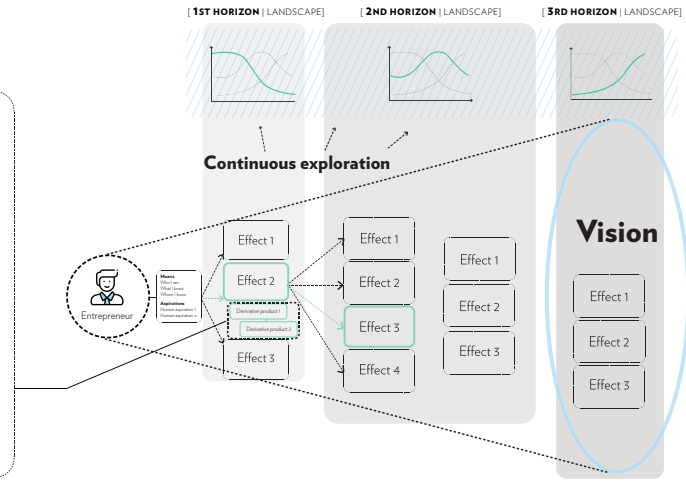
Figure 75: Short- and long-range objectives

Product platforms

An important addition to the initial framework is the definition of a product platform strategy where derivative products could be quickly made and successfully introduced (Meyer & Lehnerd, 1997). As mentioned in the chapter of product platforms, a start-up could apply several platform strategies for rapid scaling with extra propositions parallel to the main proposition (figure 76). The next chapter elaborates on Ecobloom's leverage of a platform strategy to gain competitive advantage.



Exploit existing consumer insights, product technologies, manufacturing processes and organizational capabilities.

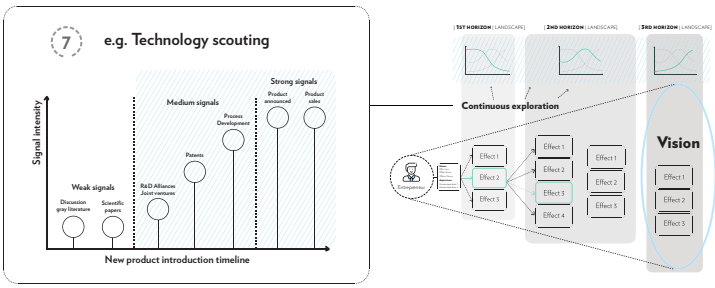


Within context, it takes the form of derivative products being introduced by leveraging existing capabilities.

Figure 76: Product platform strategy in context

Exploration frameworks

Start-ups should implement frameworks for continuous exploration to define the future landscapes as accurately as possible. For instance, assessing political, cultural, economical and technological developments, as proposed by Curry & Hodgson (2008). Ecobloom applies a framework that is partly based on the method 'technology scouting' by Brenner (1996). The implemented process documents all relevant technological developments and all the newest products. The chapter 'Implementation and evaluation' explains the full framework.



Implement exploration practices to explore environment constantly.

Figure 77: Example exploration method

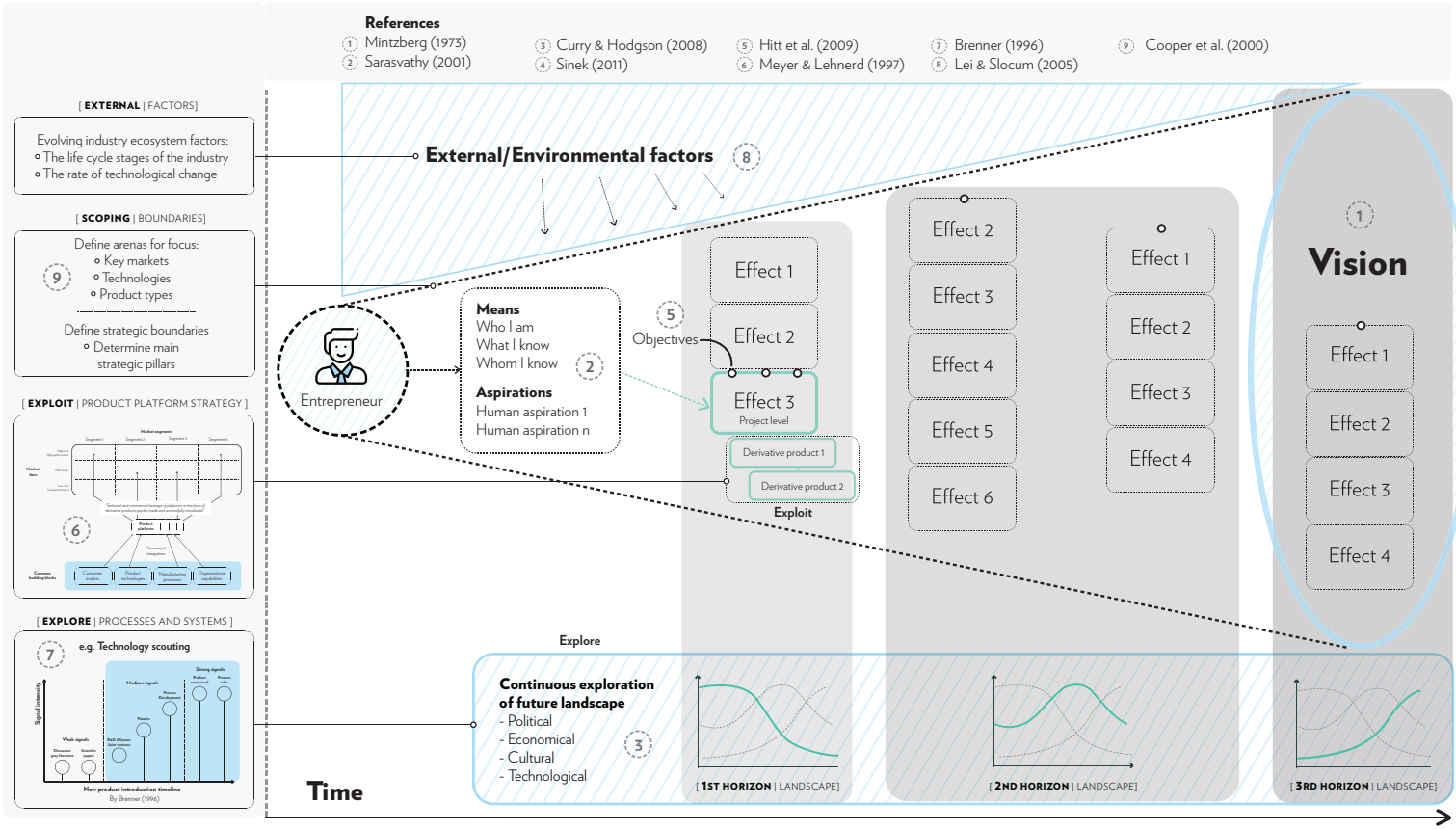


Figure 78: Final composition organizational growth framework

Evolving industry ecosystem factors

The changing industry ecosystem contains two important elements which need to be assessed. These are the product life cycles of innovations on the market and the technological change within the industry. Defining these external factors could provide an enhanced anticipation on developments in the environment.

Arenas for focus and strategic boundaries

To scope down the focus, it is proposed by Cooper et al. (2000) to define the key markets, technologies and product types early on in the process. Also, strategic boundaries need to be defined to assess whether innovations are aligned with the vision and strategy of the start-up. These boundaries contribute to the 'scope' within the framework.

Organizational scaling (short-term)

Realization of effect and overall growth

This section is called 'short-term', because it takes a look at the relatively short period in which a proposition or 'effect' is brought to market and what it involves to realize this. The 12 most important elements were identified and are presented in figure 79. By intelligently combining these elements, a start-up also establishes a foundation for long-term growth.

The chapter 'Implementation and evaluation' elaborates in-depth on the why, how and what of these 12 most crucial elements. Although the 'how' and the 'what' of the elements are highly start-up dependent, important lessons and insights of Ecobloom's performance are shared in the next chapter that could benefit other start-ups.

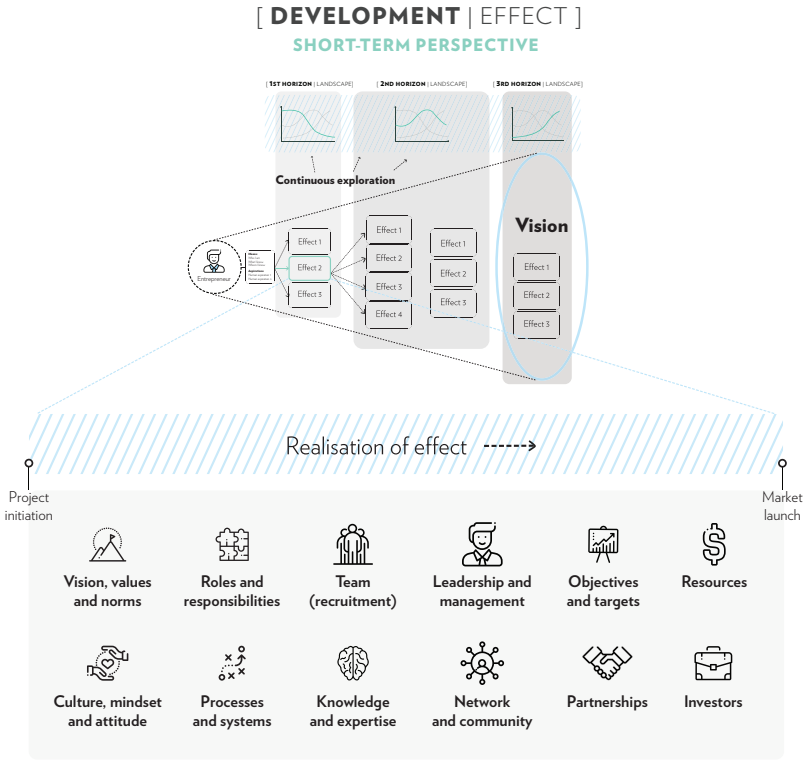


Figure 79: Organizational growth factors

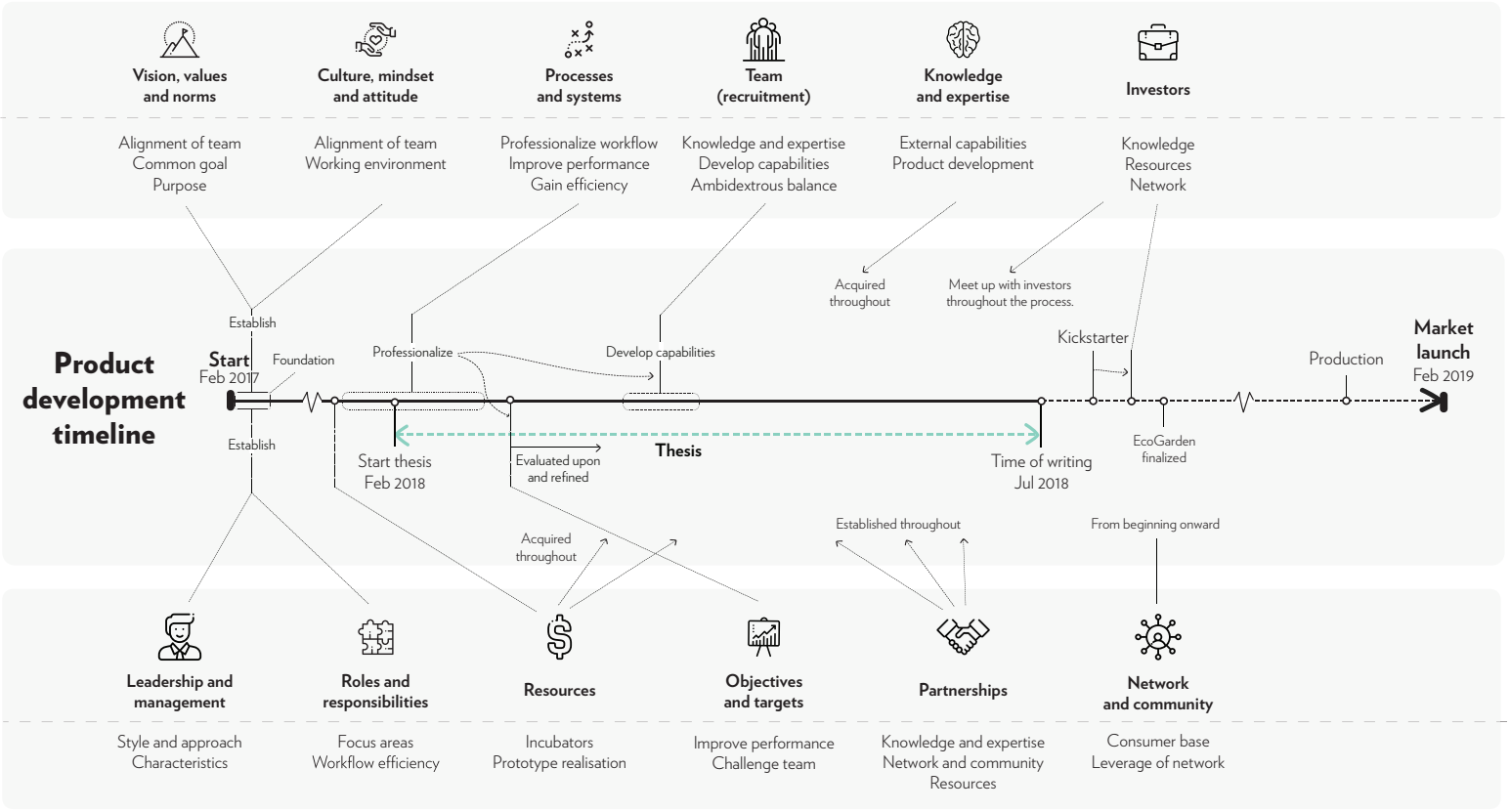


Figure 80: Organizational elements plotted on the product development timeline

The most important relationships between elements were defined at the beginning of the graduation period (figure 80). This section summarizes the main organizational design choices that were made at the start of the thesis.

- Processes and systems (e.g. time management, live task overview) should be implemented early on in the organizational design. It contributes to a professionalized workflow, improves the overall performance and much efficiency can be gained. This has a direct relation with 'objectives and targets', since everything that is now measured, can be evaluated and challenged with (ambitious) objectives. Also, it is directly related to 'team/recruitment', because this professionalized workflow is crucial when recruiting new team members and to coach their performance. Finding the right processes and systems that work effectively is an iterative and experimental practice. It is therefore advised to start implementing and testing them as soon as possible.

- Partnerships are to be established throughout the entire process, with the goal to acquire e.g. resources, knowledge and expertise and expand the network and community. Because partnerships create credibility and reflect traction, they are of outmost importance for e.g. recruitment. This mainly because potential new team members would like to join a start-up that has a professional network with well-established partners and a proven track record. Also, partnerships serve as great references for the initial consumer base to adopt the innovation and to partner up with investors.

- Monetary resources early on in the development process are crucial for prototyping purposes when developing (tech) hardware. Therefore, before starting the thesis several funds were acquired to quickly start development. Utilizing these resources for prototypes directly affects many aspects. For instance, partnerships are easier to establish but also recruitment becomes easier, because seeing and experiencing a prototype creates much more credibility than only seeing product renders. It reflects the capabilities of the team. Furthermore, these protoypes can be used at fairs and events to expand the network and community by exposing the product.

- The network and community should be established from the beginning onward. This is an ongoing activity which increases in intensity towards the Kickstarter campaign. When the Kickstarter campaign is launched, it is important that the community of potential buyers is great enough to succeed the campaign and reach the pledge goal. Resources will be designated to digital advertisements. The traction and Kickstarter campaign, in turn, will greatly influence the possibilities to take on investors. That is the reason why investors are kept on hold throughout the process.

These are the most important relationships identified before executing the graduation period. As mentioned before, the chapter 'Implementation and evaluation' yields many more insights. The chapter ends with expert interviews which evaluate the approach of Ecobloom and highlights possible improvements.

5.2 Proposition scaling

To scale up a proposition, the next high level framework has been set-up (figure 81). Each box represents a separate process and its design is based the underlying research done in the previous phase. It starts off with consumer research qualitatively as well as quantitatively. This research forms the foundation for segmenting the market efficiently and defining a fitting (product) positioning per segment. Based on this information, several advertisements and landing pages are developed with visual and textual information to resonate in an optimal way with different segments. To assess the adoption intention amongst consumers, the innovation adoption assessment section provides support. Next, the proposition validation takes place in which the ads and landing pages are utilized. Lastly, the 'validated scaling' section elaborates on scaling the proposition in an experimental and validated manner.

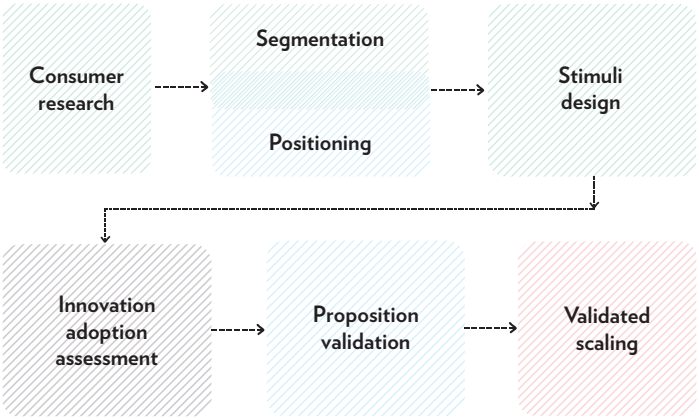


Figure 81: Framework for proposition scaling

Consumer research

The process of performing consumer research adapts the method from Gutman (1982). The means-end chain methodology is utilized and explored in-depth in Appendix 4. The method is adjusted to fit an entrepreneurial context (e.g. constraint resources). For instance, online Facebook laddering is integrated in its design to quickly obtain much data (for free). The main goal of the qualitative part is to reach depth by identifying all the possible ladders of a product. Hereafter, the goal is to quantify the data to validate whether findings are generalizable, obtaining breadth. Figure 82 displays all the steps in this process.

The reasons for implementing the means-end chain methodology specifically:

- Ecobloom's proposition contains many attributes and could be bought for various benefits, which contribute to different values. Therefore, it fits the case study start-up very well.
- Values are powerful forces in governing individuals' behavior. To obtain desired values, meaning is derived from the benefits or consequences that using or consuming a product causes (Gutman, 1982). By creating clear links between the A-B-V's, it provides insights for market analysis and segmentation, which contribute to the definition of a fitting promotional strategy and advertisements.
- It works both qualitatively and quantitatively, and can be adjusted to suit different contexts.

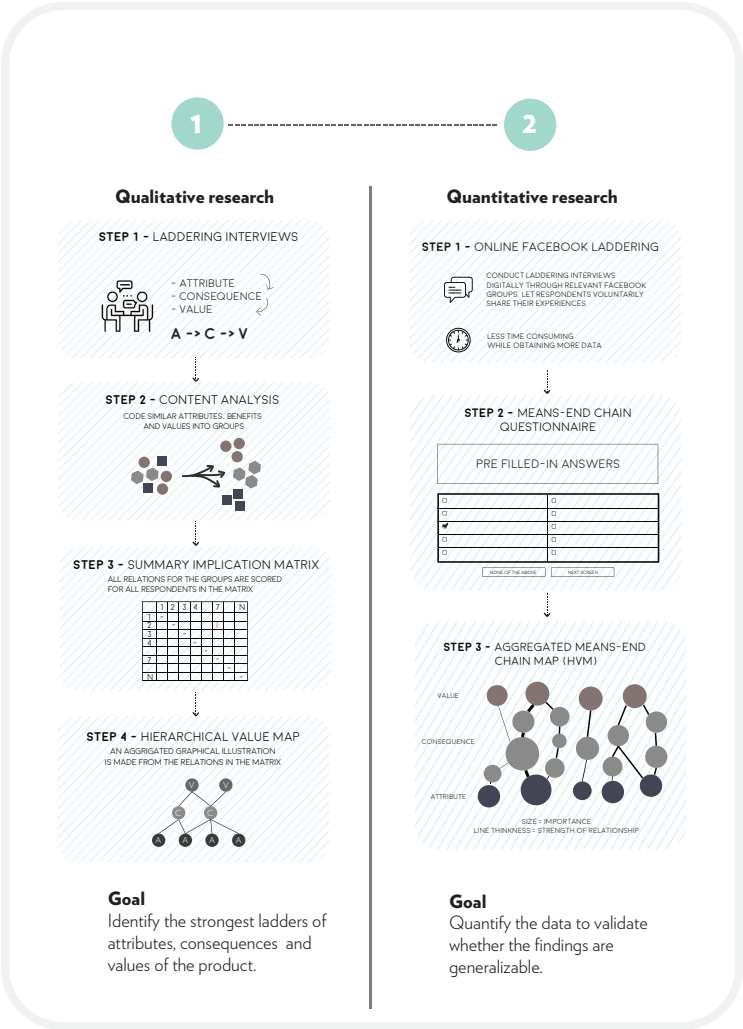


Figure 82: Consumer research process

Segmentation and positioning

Two methods are proposed to go about the segmentation and positioning process (figure 83). The first method is based on segmentation of the market by detecting patterns in the ladders from the consumer research and connecting them to persona's. Hereafter the positionings are customized for all persona's by translating the persona's to variables for the positioning (e.g. what does this persona mean for the visuals, tone & style and the main message?).

The second method works the other way around. It starts by creating several positionings which are targeted at all potentially interested consumers. It reverses the conventional STP method by Kotler (1988) to PTS (positioning - targeting - segmentation). The market is segmented based on the response from the segments and conversion rates.

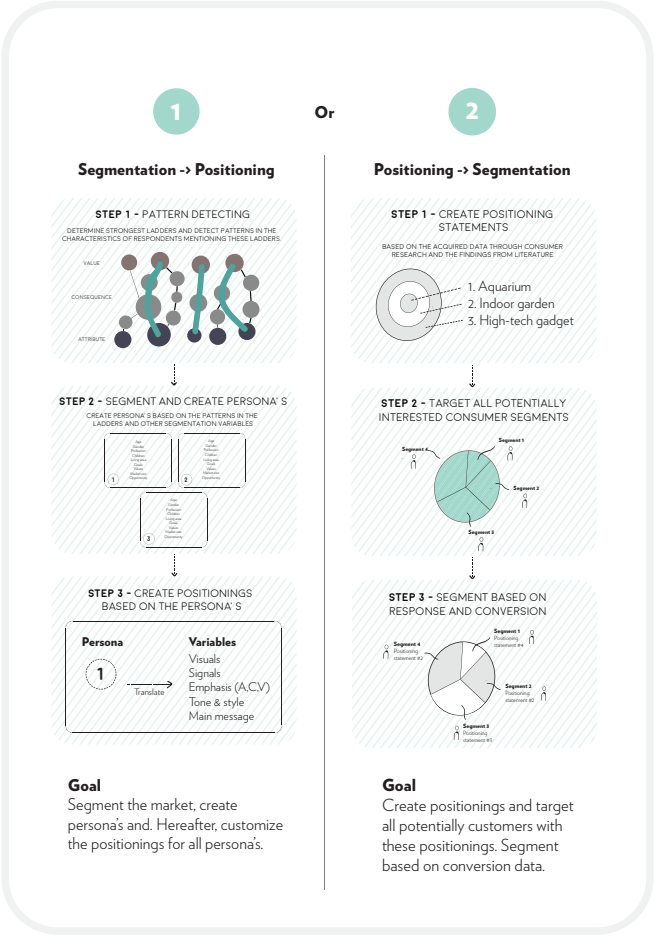


Figure 83: Segmentation and positioning process

Stimuli design

Advertisements

The stimuli should be designed in a way to resonate most with the targeted consumer. The initial idea is to position the proposition differently for different segments, as shown in figure 84. As mentioned before, social media advertisements and landing pages are used as stimuli (figure 85). When designing these stimuli, the context of the product picture, visual elements, overall tone, main message and so forth need to be strategically considered.

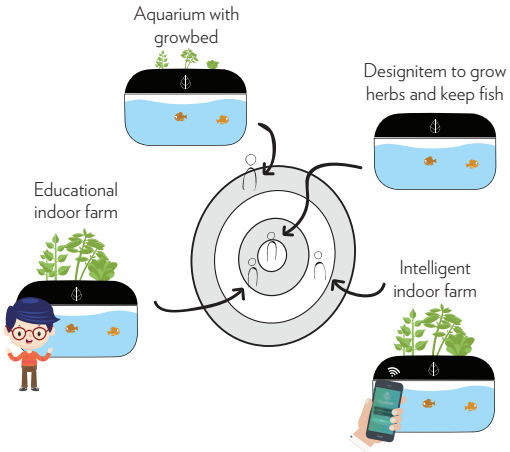


Figure 84: Different positionings for consumer segments

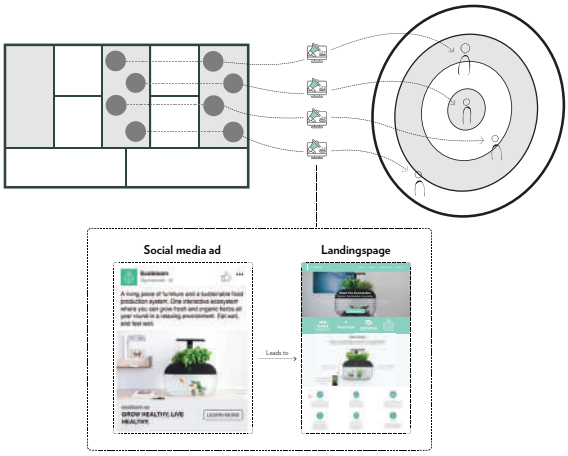


Figure 85: Social media ad and landingpage as stimuli

Landing pages

For every consumer segment or positioning identified, one landing page is required. It is built out of general sections and 'segment specific' sections. The landing page should resonate most with the targeted segment by emphasizing the most important benefits and values for that specific segment.

Figure 86 shows the format that was designed for Ecobloom. It's set-up is based on literature research, interviews and inspiration from other start-ups. Appendix 7 illustrates the landing pages more in-depth.

Figure 86: Landing page template

Innovation adoption assessment

To assess the behavioral intention and subsequently the consumer acceptance of an innovation, a conceptual framework that aims to measure independent variables after showing the participant a certain stimulus can be employed. The independent variables combined with several covariates establish an attitude and could trigger a behavioral intent. Several studies point out that independent variables form a certain attitude and hereafter a behavioral intent is created (e.g. Bruner & Kumar, 2005; Schierz et al. 2010; Kleijnen et al. 2004). The covariates could have a moderating effect on the behavioral intent (e.g. environmental concern, consumer innovativeness) and are therefore taken into account.

The behavioral intent consists of purchase intention and adoption intention. Several studies have linked the use of a product to consumer acceptance (e.g. Schierz et al. 2010; Pikkarainen et al. 2004). In this report, both these two dependent variables determine the level of consumer acceptance.

To address the gap between the behavioral intent and the actual behavior, a pre-order function on the landing pages could be included. The feature of being able to pre-order the innovation is the closest imitation of measuring the actual consumer acceptance in a digital environment. The scientific scales with questions based on 5-point likert scales are included in Appendix 5.

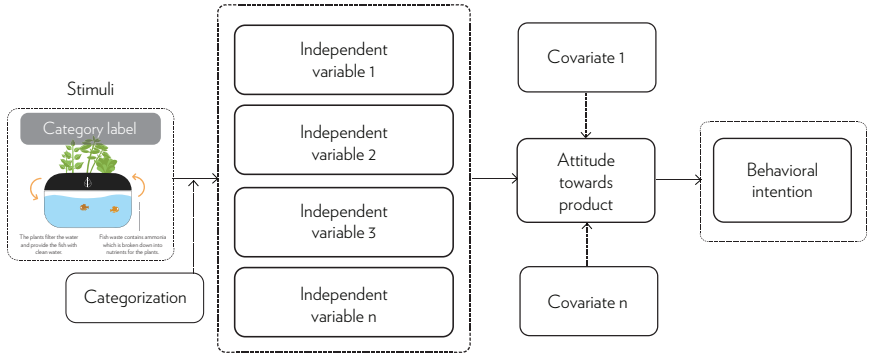


Figure 87: Innovation adoption assessment framework

Proposition validation

After both the advertisements and landing pages are developed, the quantitative validation process starts (figure 88). This process is inspired on interviews with experts in the field of innovation and often utilized by start-ups. Important variables which need to be measured when performing the experiments with social media ads are reach and click through rate, but also qualitative data can be obtained by including a 'feedback' text field.

The landing pages should have installed tags and trackers to monitor the behavior of visitors. The most important value to measure is the conversion rate, the number of visitors that actually sign-up or pre-order the innovation. Ultimately, the experiments test whether the right audience has been found and is targeted with the right positioning. Gathered data can be benchmarked with industry data.

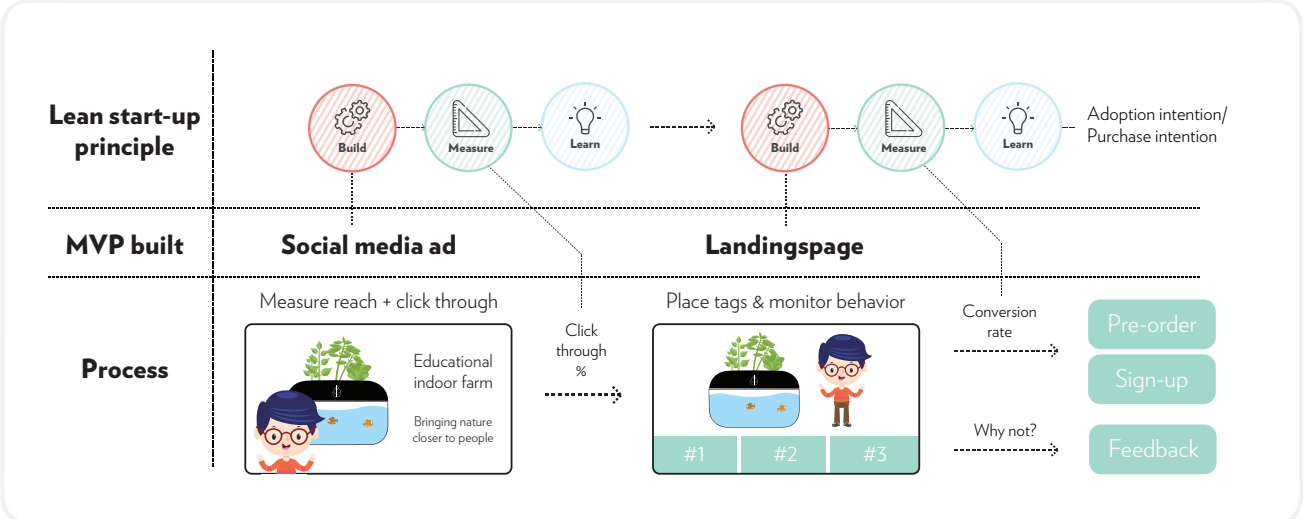


Figure 88: Process of quantitative product validation

Validated scaling

The consumer acceptance of scalable products/ services should be generalizable across contexts and not be geographically dependent. The validated scaling framework carefully scales business in a validated and rational, yet fast and iterative manner. It is based on build-measure-learn loops (Ries, 2011), and contains stage-gate assessments which can result in a persevere, pivot or stop decision. The stage gate criteria (desirability, viability, feasibility) should be determined before the MVP is launched and functions as quality control mechanism. It is illustrated in figure 89.

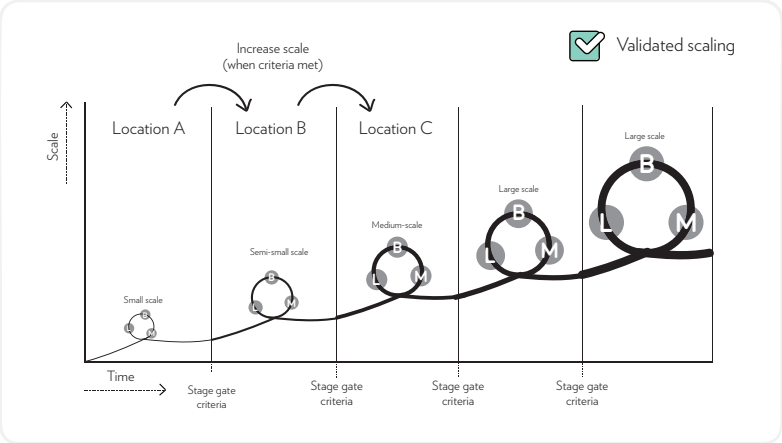


Figure 89: Validated scaling framework

If an experiment does not pass the criteria of the stage gate, a pivot is necessary, where certain variables could be strategically adjusted. The table displayed in figure 90 gives examples of variables that can be altered when criteria are not met.

To which locations to expand to with the proposition is a strategic decision at the organizational level. This might depend on:

- Competitive field
- Consumer behavior
- Consumer segments and priority
- Supply chain
- Laws and regulations
- Technological, cultural, political and economical trends
- And so forth.

Although many variables are involved in the expansion of the location, the methods that are described in this chapter are valuable to assess market potential and consumer behavior quickly. Running ads in new areas can rapidly provides insights about the potential of a product in that particular area.

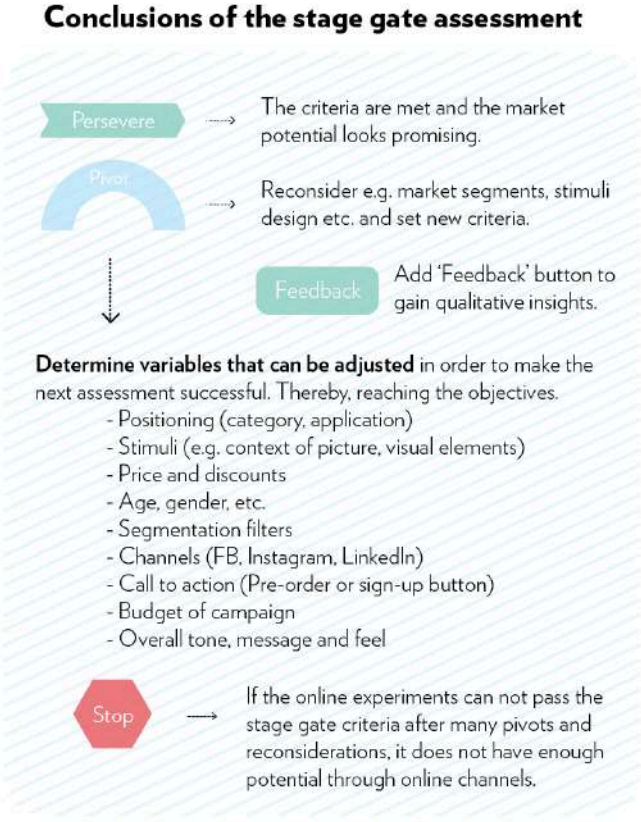


Figure 90: Decision options at the stage gates

Framework for proposition growth

Below is the strategic framework presented with all the separate components linked together. To boost the process of scaling up, several tools are proposed (lowest layer in figure 91). First, innovation diffusion is an established phenomenon in literature. Within the context of scaling up, partnering up with opinion leaders, influencers and change agents is crucial for fast innovation diffusion. These individuals have the potential to spread an innovation within their social network quickly.

Second, the construal level theory could be applied to increase impact and positively influence the innovation adoption. Next, the innovation adoption attributes 'observability' and 'trialability' need to be taken into account. An innovation spreads significantly faster when exposed in the right stores, fairs or through other channels. Moreover, three important enablers of creating a tipping point can help with fast scaling up. Within the chapter 'implementation and evaluation' examples are given in which way Ecobloom applied these theories.

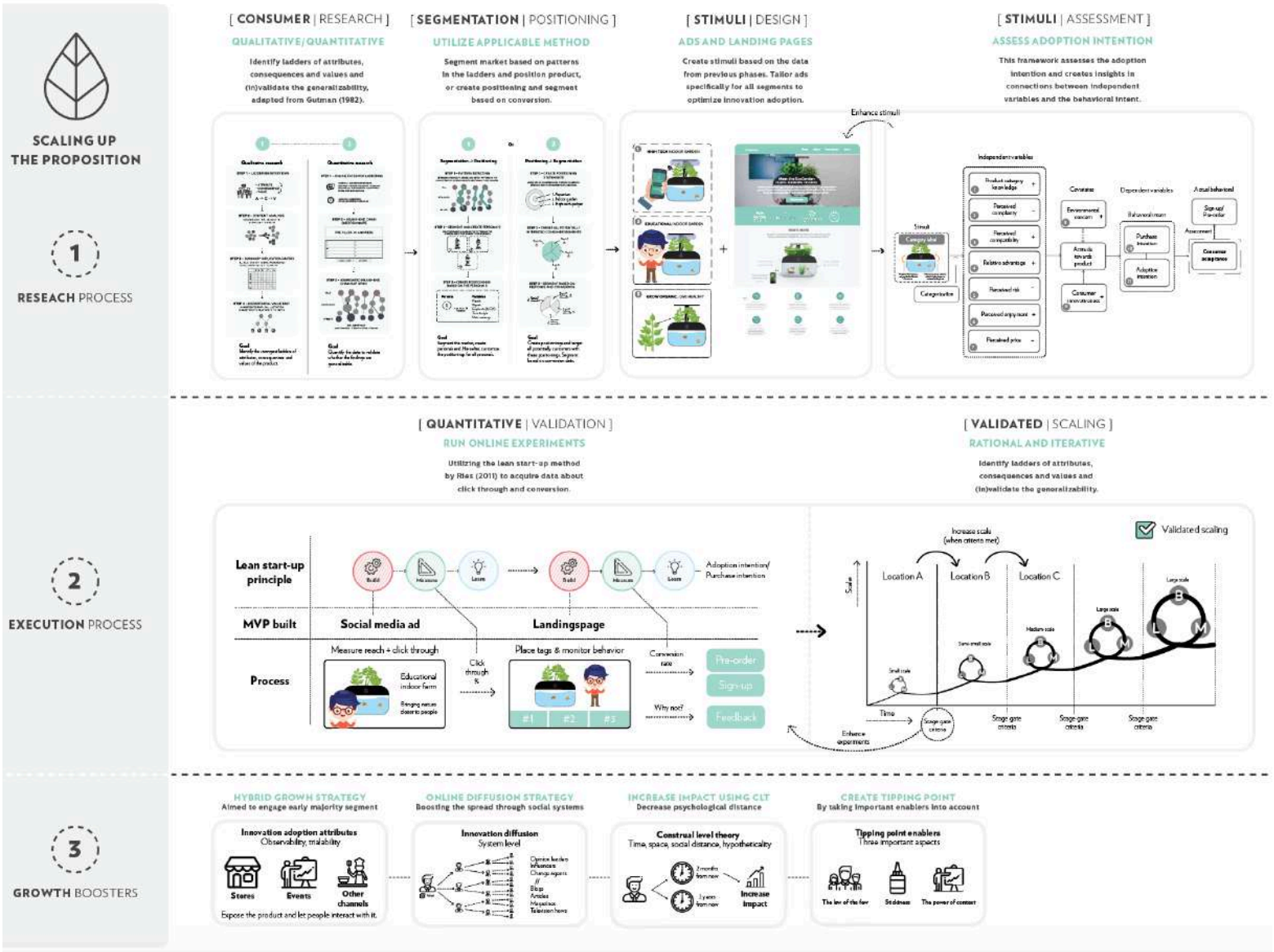


Figure 91: Strategic framework for proposition growth

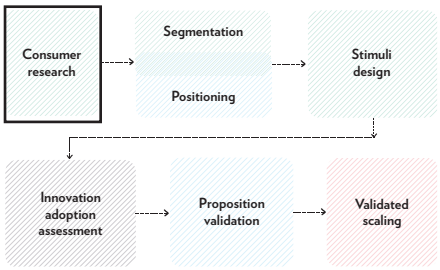
6 | Implementation & evaluation

In this chapter the proposed framework is implemented, evaluated upon and enhanced. Ecobloom has been utilized for implementation and generation of insights. First, the growth of the proposition is performed and hereafter the organizational growth. The chapter ends with expert interviews which evaluate the approach of Ecobloom and highlights possible improvements.

6.1 Implementation proposition scaling

Consumer research

The consumer research phase of Ecobloom consists of offline qualitative as well as online quantitative laddering interviews. These methods were employed for the two main categories the EcoGarden exists of, namely an aquarium and indoor garden. The initial research aims to identify the motivation for people why they possess a product in one of these two product categories. What benefits are they looking for and to which values does this contribute? As mentioned before, the research process that was designed, is partly adapted from Gutman (1982). The full consumer research process with the intermediate steps can be found in appendix 4.



Results of the interviews (aquarium category)

Utilizing an online FaceBook laddering approach, we managed to interview over 70 respondents quickly. Below the aggregated means-end chain map is visualized and communicates the most important attributes, benefits and values. The size of the circles and thickness of the lines indicate the importance/strength of the relationship.

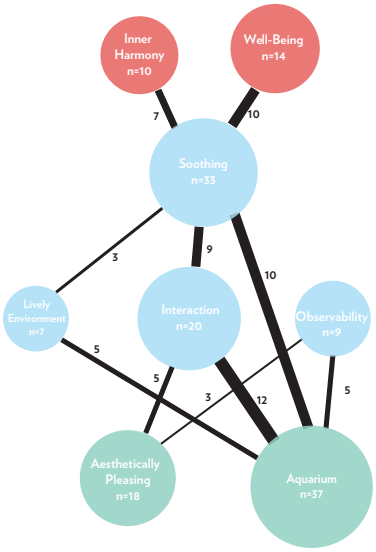


Figure 92: HVM aquarium

Results of the interviews (indoor garden category)

Utilizing an online FaceBook laddering approach, we managed to interview around 15 respondents in this category. Again, below the aggregated means-end chain map is visualized and communicates the most important attributes, benefits and values.

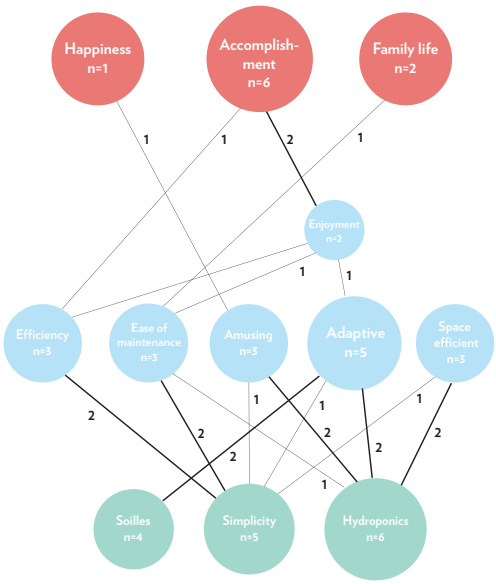


Figure 93: HVM indoor garden

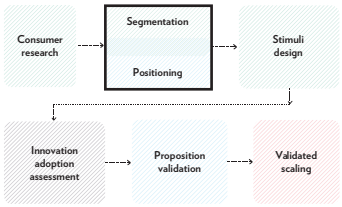
Ladders EcoGarden

After assessing the two categories separately, digital questionnaires were conducted to discover all the possible ladders the EcoGarden contains. This research set-up is shown in appendix 4. Respondents were shown a short explanatory animation video and several pictures of the product in use. The output of this research part provides valuable insight in the attributes-benefits-values ladders that potential consumers segments could purchase the EcoGarden for. The most common ladders:

1. Automated/self-sustaining - low maintenance - freedom
2. Fresh and organic food produce - healthy meals - well-being
3. Indoor garden - low maintenance - family life
4. Simplicity - optimal growth - accomplishment
5. Aesthetically pleasing - contribution to interior - pleasure
6. Aquarium - Soothing and relaxing - inner harmony
7. Lively environment - bring nature closer - happiness
8. Educational process - fun and interactive education - wisdom
9. Air puryfication - increase oxygen in the room - well-being
10. IoT and smart sensors - grow all year round - pleasure

Segmentation and positioning

During the step of segmentation and positioning process two methods were explored to assess their usability and value within an entrepreneurial context. Method 1 explores segmentation and creating positioning statements hereafter. Method 2 works vice versa.



Method 1

The 10 strongest ladders of the Ecogarden were identified in the previous phase. However, identifying patterns and connecting the ladders to specific consumer segments has been challenging due to the relatively low quantity of respondents. With the time and resources available in the process, the quantity is not large enough to draw conclusions with much certainty. Therefore, most of the conclusions drawn are 'risky assumptions' and need to be validated as quickly as possible.

Figure 94 displays the identified patterns in the ladders and links them to persona's/consumer segments. In turn, theses persona's are used to determine important variables for the positionings, acting as guidelines for the design.

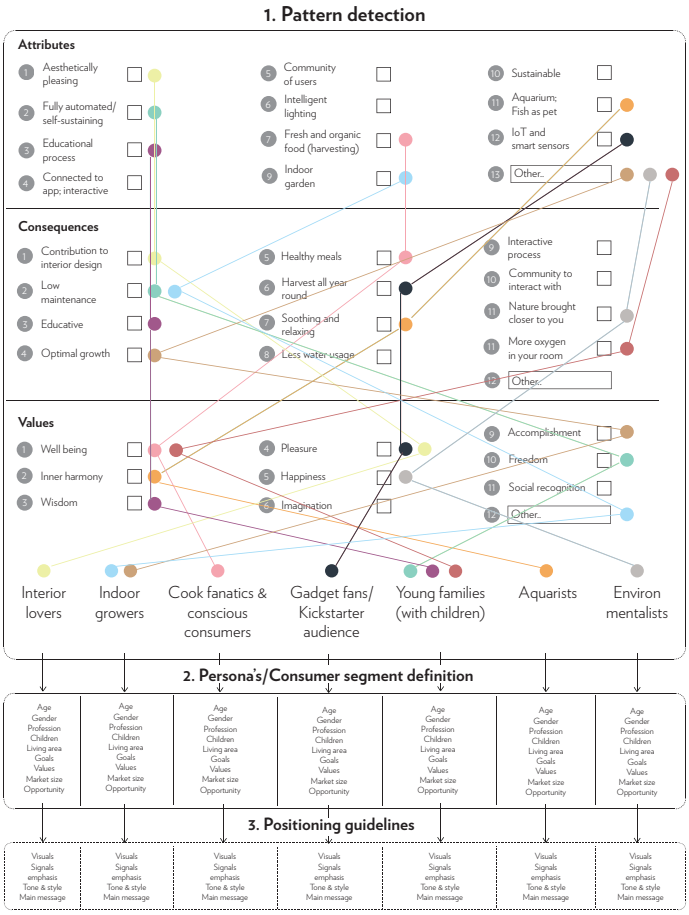


Figure 94: Identified ladders and persona's

Method 2

The second method takes a different approach and is based on the assumption that potential consumers could be segmented based on their response on marketing stimuli. In the case of Ecobloom the three directions are: aquarium, indoor garden and high-tech gadget. Our research points out that the EcoGarden is categorized mostly as a product that fits one of those three categories.

These positionings are targeted at potentially interested segments using Facebook segmentation filters and the segmentation process takes place based on the stimuli response (e.g. click through rate and conversion rate). Note: this process is performed after the different stimuli are designed. It is illustrated in figure 95.

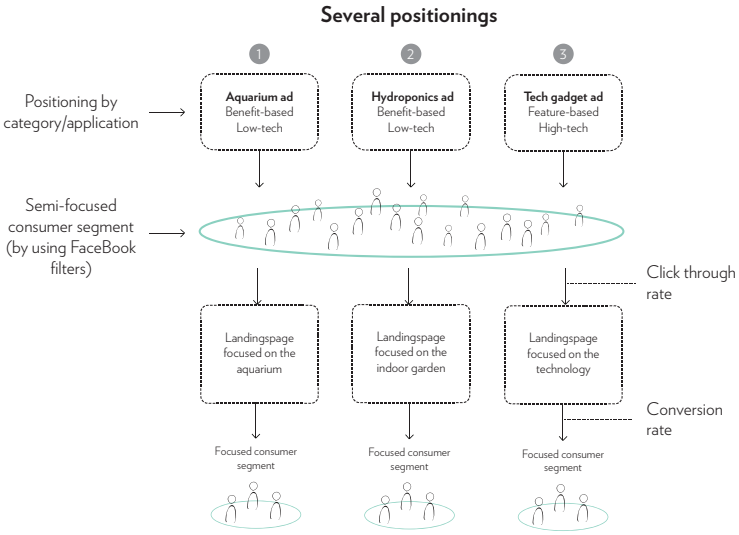
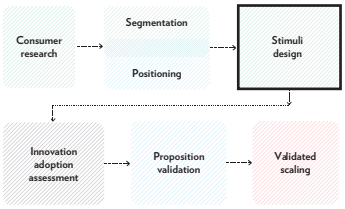


Figure 95: Segmentation based on positioning response

Stimuli design

Advertisements

The stimuli were developed in collaboration with professional photographers. The appropriate environments were used to steer the categorization process of potential consumers. These different visual stimuli were utilized in different marketing messages and positioning statements. All the marketing stimuli used are shown in Appendix 5. The positioning statements are built of visuals and text. The wording in the ads are carefully chosen and designed in alignment with the visuals. Figure 96 shows three examples of advertisements that were used during the experiments.



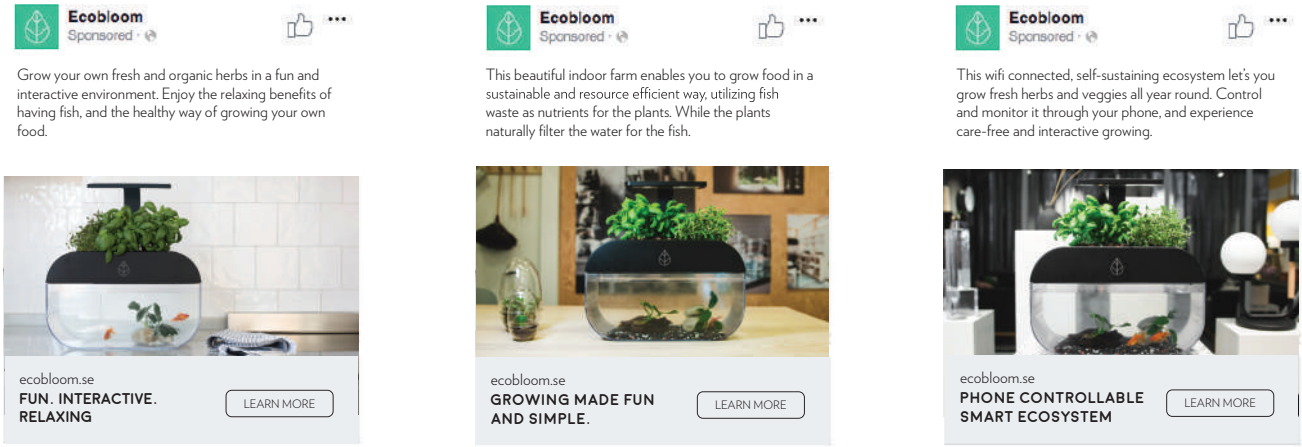


Figure 96: Social media advertisement examples

Landing pages

Hereafter, several landing pages were carefully composed with all the consumer research and literature findings. Four main pages were designed:

- A general one (benefit & feature based)
- Aquarium focused (benefit based, low tech)
- Indoor garden focused (benefit based, low tech)
- Technology focused (feature based, high tech)

The set-up of all landing pages are displayed in Appendix 7. Figure 97 displays the indoor garden focused landing page.

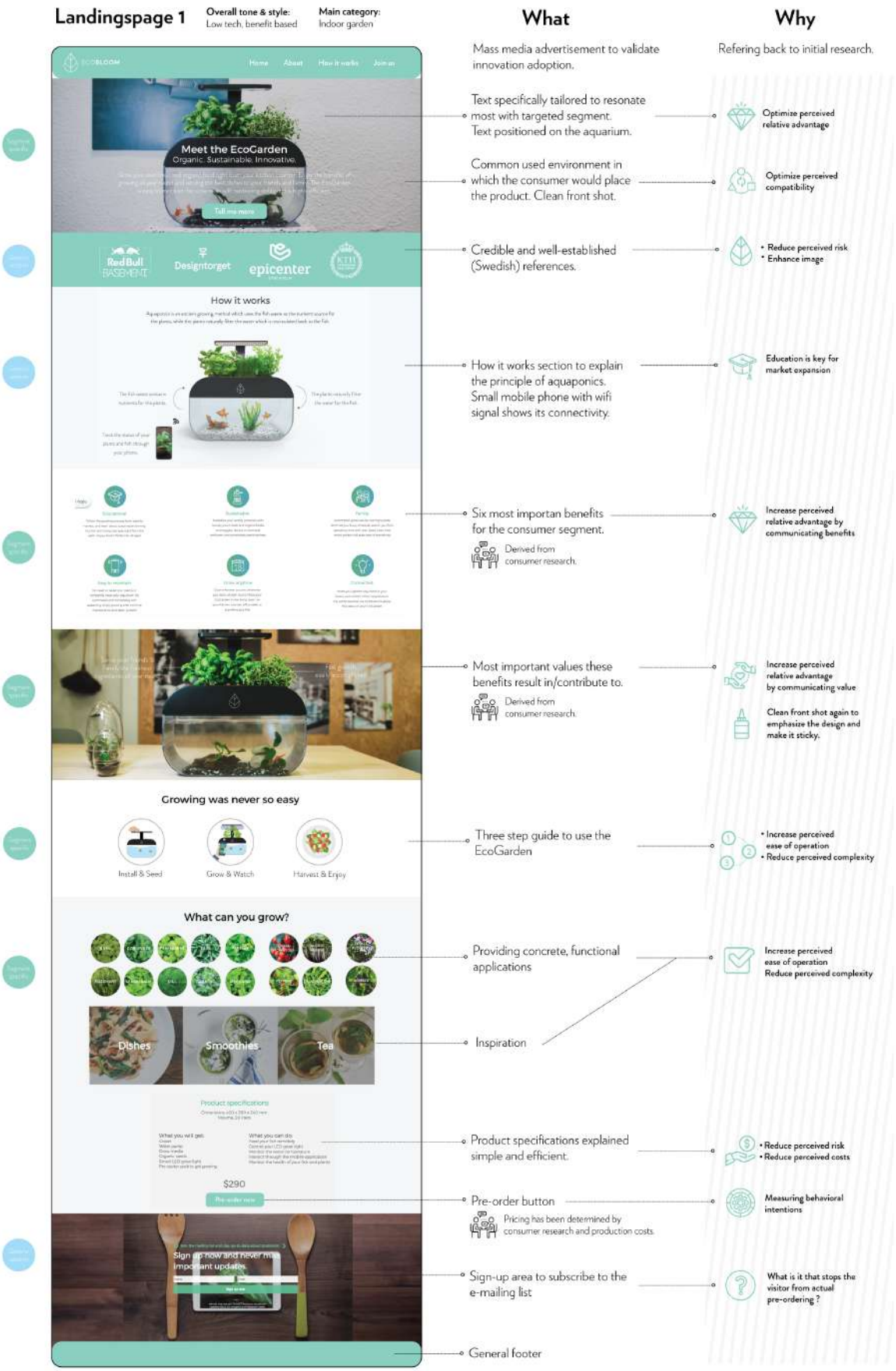


Figure 97: Landing page set-up

Innovation adoption assessment

Before validating the proposition quantitatively, the innovation adoption should be quickly assessed on a small scale. The framework (figure 98) is composed of variables relevant to the proposition of Ecobloom. It contains e.g. perceived complexity, enjoyment and price, links these to an attitude and consequently a behavioral intention.

Important findings were derived from the adoption assessment which is taken into account for the redesign and enhancement of parts of the stimuli. Also, clear patterns were found that explain the consumer acceptance per consumer segment. Appendix 5 contains the interview guide with questions that can be used by start-ups.

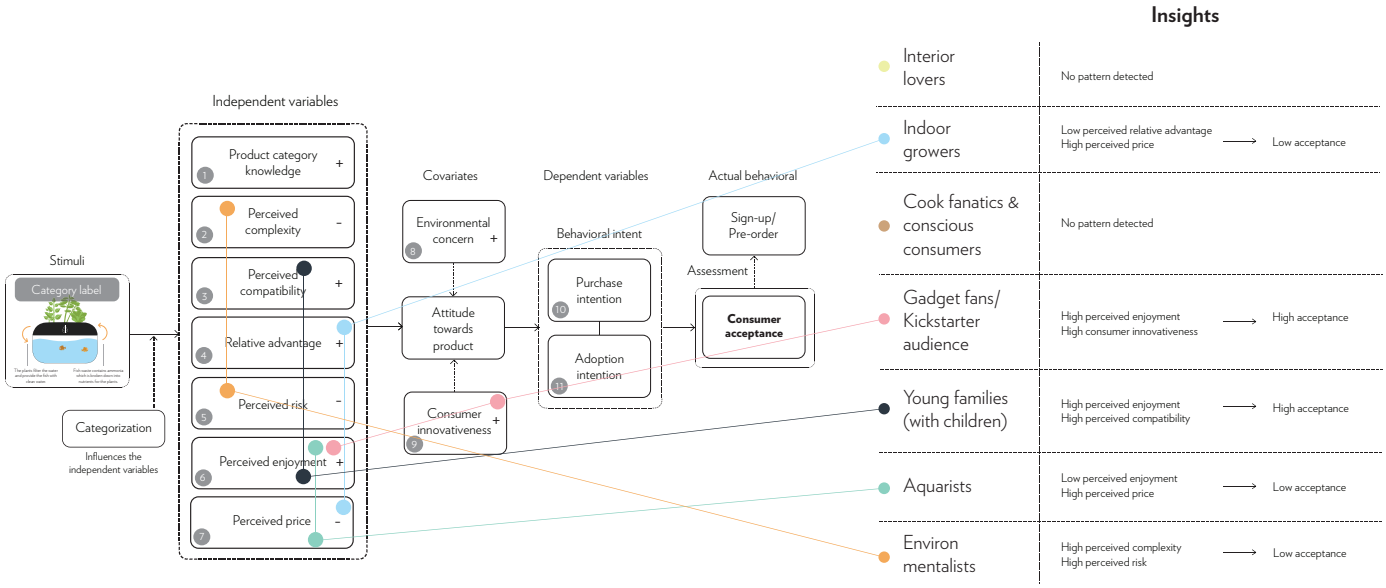


Figure 98: Innovation adoption assessment

Pricing

The framework pointed out that pricing is a crucial and decisive variable, therefore extra research has been done with the following framework, adapted from Van Westendorp (1976). Respondents who showed interest in purchasing the EcoGarden answered the questions in figure 99. Stimuli in the form of two pictures and one explanatory animation video was shown.

The answers provided great insights in the price perception per consumer segment. A reasonable price is situated in between the value of 'A' and 'B'. This price is mainly determined by consumer comparison of the EcoGarden with products from its competitive field. Therefore, the categorization process has a significant influence on the price estimates.

At what price (in Euro's) would you conider the product to be...

Priced so low that you would feel something is wrong with it?	€	
A bargain - A great buy for the money?	€	A
Starting to get expensive, so that it is not out of question, but you have to give some thought to buying it	€	B
So expensive that you would not consider buying it?	€	

On a scale from 1 to 7, how likely are you to buy the EcoGarden at the price of 'A'?

Very unlikely to buy ○ ○ ○ ○ ○ ○ ○ Very likely to buy

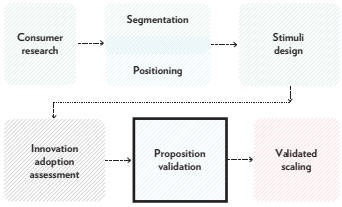
On a scale from 1 to 7, how likely are you to buy the EcoGarden at the price of 'B'?

Very unlikely to buy ○ ○ ○ ○ ○ ○ ○ Very likely to buy

Figure 99: Pricing assessment, adapted from Van Westendorp (1976)

Proposition validation

Approximately 25 experiments ran for 1 day each during the proposition validation process. The most relevant experiments are displayed in figure 100. To optimize the comparability, for (almost) every experiment the amount of money spent was equal (€10). Important elements are highlighted in the overview.



Combining best practices

Same positioning, different geographical location

	Experiment 1	Experiment 2	Experiment 3	Experiment 4	Experiment 5	Experiment 6	Experiment 7	Experiment 8	Experiment 9	Experiment 10	Experiment 11	Experiment 12	Experiment 13	Experiment 14	Experiment 15
Goal	Test the effect of using different wording, same category focus	Test the effect of using different wording, same category focus	Track performance of advertising for lookalike audience	Check which positioning works best when targeted at the same audience	Target people associated with technology	Application-based positioning, educational device for young families	Target people associated with crowdfunding and technology	Test whether the discount incentive and no price mentioned boosts conversion	Kickstarter audience U.S.	Kickstarter audience U.K.	Kickstarter audience Holland	Kickstarter audience Germany	Kickstarter audience France	Kickstarter audience Italy	Kickstarter audience Austria
Positioning/category	Aquarium	Hydroponics	Aquarium & hydroponics	Tech/hydro/aqua	Tech	Based on application: education	Tech	Tech	Tech	Tech	Tech	Tech	Tech	Tech	Tech
Price	$290	$290	Not mentioned	$290	$290	$290	Not mentioned	Not mentioned + 25% discount	Not mentioned + 25% discount	Not mentioned + 25% discount	Not mentioned + 25% discount	Not mentioned + 25% discount	Not mentioned + 25% discount	Not mentioned + 25% discount	Not mentioned + 25% discount
Area & age	Sweden, 18-55	Sweden, 18-55	Worldwide, not defined (limitation of Instagram)	Sweden, 25-34	Sweden, 25-34	Sweden, 24-45	Sweden, 24-35	Worldwide, not defined (limitation of Instagram)	US: Los Angeles 24-35	U.K, 24-35	Holland, 24-35	Germany, 24-35	France, 24-35	Italy, 24-35	Austria, 24-35
Segmentation filters (audience)	Fish, family, parenting, meditation, furniture, home appliances, home improvement, environmentalism, sustainability, marriage, parents (all), interior design	Harvest, homegrown, garden furniture, home and garden, family and relationships	Lookalike audience based on Instagram followers	Filters based on the website visitors, derived from the Google Analytics data.	Technology	(Young) parents with children (between 0-18)	Kickstarter, Indiegogo, crowdfunding	Lookalike audience based on Instagram followers	Kickstarter, Indiegogo, crowdfunding	Kickstarter, Indiegogo, crowdfunding	Kickstarter, Indiegogo, crowdfunding	Kickstarter, Indiegogo, crowdfunding	Kickstarter, Indiegogo, crowdfunding	Kickstarter, Indiegogo, crowdfunding	Kickstarter, Indiegogo, crowdfunding
Visual elements	Landing page: Aquarium	Landing page: Hydroponics	Landing page: General	Tech/hydro/aqua landingpages	Tech landingpage	Landing page: Aquarium	Landingpage general	Landingpage general	Landingpage general	Landingpage general	Landingpage general	Landingpage general	Landingpage general	Landingpage general	Landingpage general
FB ads/ Insta promo	3 FB ads, running parallel	3 FB ads, running parallel	Instagram promotion	3 different FB ads, running parallel	FB ads	3 FB ads, running parallel	FB ads	Instagram promotion	FB ads	FB ads	FB ads	FB ads	FB ads	FB ads	FB ads
Reach & click through	2454 reach, 0 click through	- 0 click through	1380 reach, 81 click through	4219 + 4017 + 3902 + 12156 reach 5 + 6 + 3 +12 click through	1398 reach, 53 click through	1830 reach, 17 click through	1049 reach, 50 click through	1833 reach, 57 click through	962 reach, 11 click through	1892 reach, 62 click through	1843 reach, 68 click through	2295 reach, 85 click through	2510 reach, 78 click through	5104 reach, 104 click through	1846 reach, 58 click through
CTR	--	--	5,9%	0,1%	3,8%	0,9%	4,8%	3,1%	1,1%	3,3%	3,7%	3,7%	3,1%	2,0%	3,1%
Sign-ups or pre-orders	0	0	5	0	1	0	3	10	3	9	8	13	8	12	6
Budget	€4	€4	€10	€30	€10	€10	€10	€15	€10	€10	€10	€10	€10	€10	€10
Conversion rate	--	--	6,2%	--	1,9%	--	6%	17,5%	27,3%	14,5%	11,8%	15,3%	10,3%	11,5%	10,3%
€/sign-up	--	--	€2/sign-up	--	€10/sign-up	--	€3,3/sign-up	€1,5/sign-up	€3,3/sign-up	€1,1/sign-up	€1,1/sign-up	€0,77/sign-up	€1,25/sign-up	€0,83/sign-up	€1,67/sign-up
Ads							Automated and intelligent ecosystem								
Insights	Focus of segmentation is too scattered. Different wording does not make a significant difference, the positioning statements are still too close.		Benefit-based message in the Ad. Also no price was mentioned which might have lowered the barrier to sign-up. Instagram promotions are limited in their ability to highly customize the settings.				Control and monitor your plants, feed your fish, and adjust your light settings, right through our interactive app.								

Figure 100: Experiment table

- Using focused segmentation filters helps increase the click through rate significantly. Experiment 1 and 2 both show that a scattered focus with too many segmentation filters result in virtually no click through and conversion.

- The sign-up option, rather than pre-order option, decreases the barrier to sign-up enormously. The conversion rates have been significantly higher when 'sign-up' was mentioned, instead of 'pre-order'. Furthermore, adding a discount incentive of 25% also significantly improved the conversion rate. Last, removing the price of $290 posed a strong effect on the amount of sign-ups.

- Experiment 5 learns us that technology associated people within the range of age of 24-35 provides an interesting click through rate.

- The ambiguous categorization of 'intelligent and automated ecosystem' creates much click through and interest among audience within the area of Kickstarter/ crowdfunding/Indiegogo. The ad is feature-based and emphasizes the technology, while the landing page is kept general and illustrates the bigger picture of Ecobloom. The audience between 24-35 is generally (very) familiar with Kickstarter and crowdfunding initiatives. Therefore, they understand the purpose of signing up and backing a project.

- These findings slowly shaped an optimal set-up: no price mentioned on website, sign-up button, rather than pre-order, and providing a 25% discount incentive.

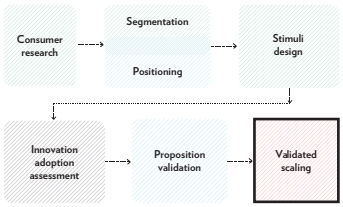
- The application based positioning in which the educational aspect for children is emphasized was targeted at young parents. The conversion in general of the indoor growers, aquarists, interior lovers, young families and cook fanatics was not fruitful enough to continue and spend money on, considering our constraint budget and time to obtain enough interested subscribers for the Kickstarter campaign. This has been the main reason to explore the young technology associated audience more.

- After an optimal combination of variables has been found, the stage gate criteria were met and the ad is ready to be scaled up geographically.

- The lookalike function on Instagram creates an audience based on the current followers and targets ads at these people. Although the results looked promising, Instagram is very limited in the amount of variables that can be adjusted. Therefore, not enough data is gathered to understand exactly how certain effects are caused.

Validated scaling

10-12 Experiments and pivots were required to pass the first stage gate moment with one positioning. It has been a quest of combining many different variable into a mix that converts a specific consumer audience very well through digital marketing efforts. The technology emphasizing ad was conversing very well for the Kickstarter/crowdfunding audience in the digital environment. This group can be associated with the 'innovators' and 'early adopters', as mentioned by Moore (2014). Hereafter, scaled to several locations across the globe. As shown in the experiment table, experiment 9-15 has applied the same ad in different geographical locations, with a high success rate.



This specific audience reflected high engagement, CTR and conversion rates. While other segments showed a poor adoption intention. Therefore, we focused only on this specific audience through the digital channels to scale in a validated manner.

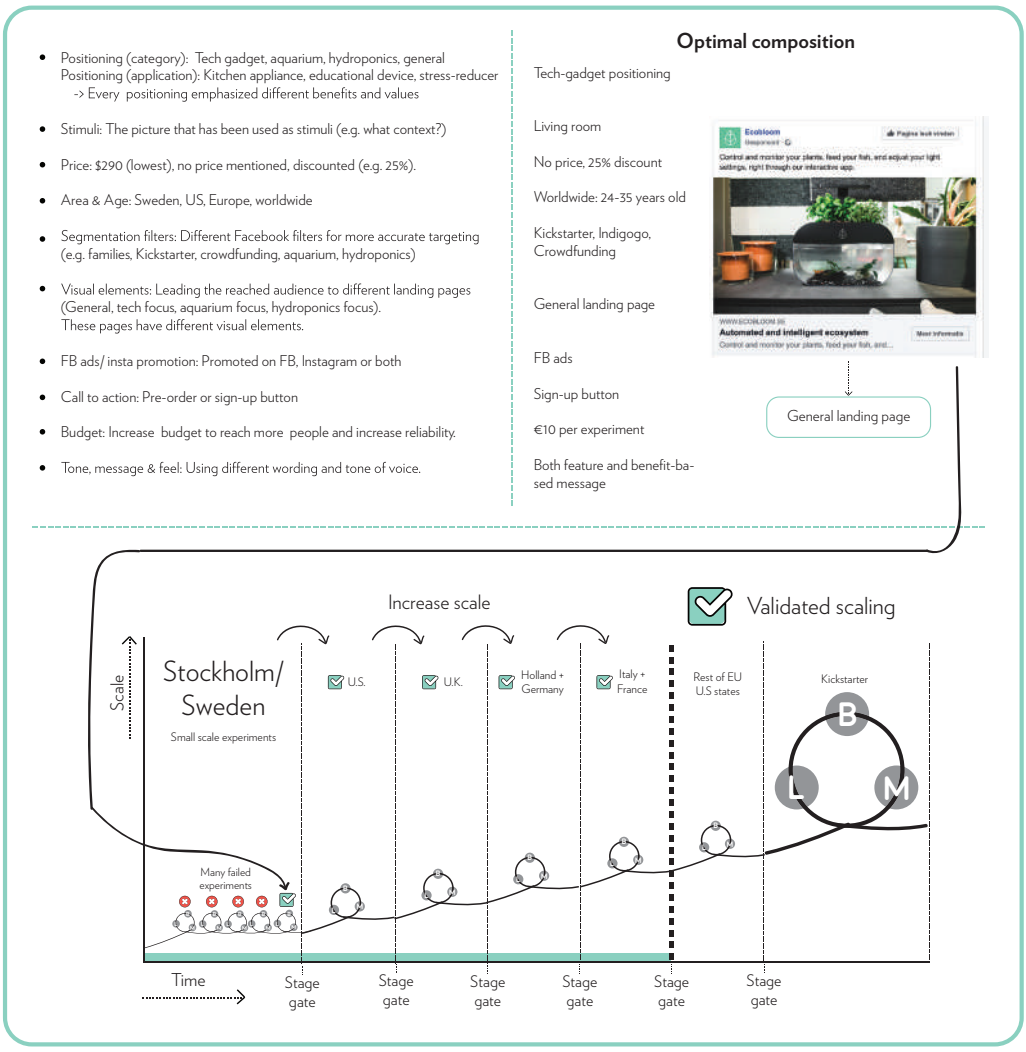


Figure 101: Validated scaling utilizing the technology positioning

Scaling multiple ads

Ideally, multiple ads perform well for different consumer segments. Optimal growth can then be reached by running several successful ads parallel, targeting different consumer segments with customized ads. However, due to constraint resources in the process of the thesis (time and money), Ecobloom continues the process of growth with one focus segment in the digital environment. Although other consumer segments (young families, cook fanatics) did not convert well digitally, it does not necessarily mean they are not potential buyers of the product.

To address this early majority, an offline marketing strategy can be utilized by partnering up with fairs, stores and events to gain exposure and create traction in the less innovative consumer segments. As mentioned by Moore (2014) this adoption group wants to see well-established references before investing substantially and are driven by a strong sense of practicality. The conclusion addresses the offline marketing strategy of Ecobloom.

Case study learnings

Establishing stage gate criteria

Creating challenging, yet reachable stage-gate criteria has been difficult. We found that two crucial factors determined our criteria, these were our **marketing budget** and the **Kickstarter pledge goal**. To succeed the Kickstarter campaign and obtain enough funding to start production, approximately [redacted] units needed to be sold. In several interviews and (non-scientific) articles it was pointed out that a start-up should at least "sell" 30% of this amount before launching the campaign. The main reason for this is to gain traction early on in the campaign and create a hype so other backers will follow. In the case of Ecobloom, [redacted] units needed to be "sold" before the campaign goes live.

One important assumption we had made was that around 5% of our email subscribers would converse. This amount is rather high, but the people in our list were "hot leads". Thus, if we need to [redacted] the subscription list would converse, in total we needed [redacted] email subscribers (!). Our marketing budget initially was [redacted] Considering the amount of subscribers we needed, 1 subscription ideally would cost around [redacted]. After many experiments we came to know that [redacted] reachable with the Kickstarter audience.

The variables we played with in the experiments were mainly: Categorization, emphasis on different benefits and values, price, age, segmentation filters (audience). We found out that the product-market fit could be measured effectively with the €/sign-up as a reference. The formula for success is: Social media advertisements + fairs/events + opinion leaders + personal network = hypothetically enough subscribers to succeed the Kickstarter campaign.

Consumer understanding

One of the strengths of the proposition framework is the optimized innovation adoption, but also in the understanding of who the actual consumer is. Initially we expected that 'aquarists' and 'indoor growers' would be the main consumer segments. But during the process of interviews and product validation, it appeared that the perceived instrumentality for these consumer segments was not high enough. More specifically, indoor growers mostly look at the functional benefits of the product. Which is how much can be grown and what type of plants. In their perception the price of the product was too high, compared to the functional benefits is delivers (ROI not high enough). The same phenomenon appeared when analyzing most aquarists. These people thought the aquarium was too small and not enough fish could be kept.

By running online experiments, and performing interviews and questionnaires parallel, much understanding is created. Data of the experiments can be explained by offline interview findings (see example mentioned above). This leads to important strategic considerations. For instance, is it better to adjust the product to the desires of the initial target consumers or shift to other consumer segments altogether? We have chosen to shift to different consumer segments, because they showed to have much adoption potential during the online experiments.

6.2 Implementation organizational scaling

This section contains knowledge from previous and existing experiences of scaling up Ecobloom. Besides that, it has been enriched with expert interviews/opinion to validate and enhance the framework's validity. Many steps are taken to prepare Ecobloom not only for the far future, but also more short-term to succeed in bringing the first product to market. This chapter explores the steps which were taken into account during the development of the first 'effect', the EcoGarden. As figure 102 shows, this ranges from project initiation to product on market.

The most crucial organizational related aspects are identified (figure 102) and evaluated during/after Ecobloom's implementation. The aspects are mapped on a timeline to assess its timing and the interaction effects between them.

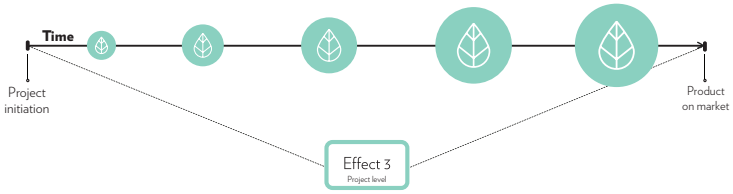


Figure 102: Scaling Ecobloom during the first proposition

The process of start-up growth is characterized by its overall messiness (Ries, 2011). This section aims to create understanding in why and how specific activities were undertaken. The activities are grouped in the most important categories:

Figure 103: Organizational growth factors

- *Vision, values and norms*

  To start off, this is the foundation of any organization. The vision must be shared and values and norms are aligned throughout the team. Often times, these elements are implicit and not explicitly communicated. However, at Ecobloom we emphasize the vision by creating vision concepts. This in order to provide direction for the exploration and communicate where we believe the organization is heading. By sketching out and visualizing possible future scenarios, the abstract future is translated to a more concrete one. Vision concepts challenge the future and align the team to work towards a common understood goal. It also becomes more apparent which intermediate steps need to be taken to ultimately reach the vision, this method is also known as 'backcasting' (figure 104).

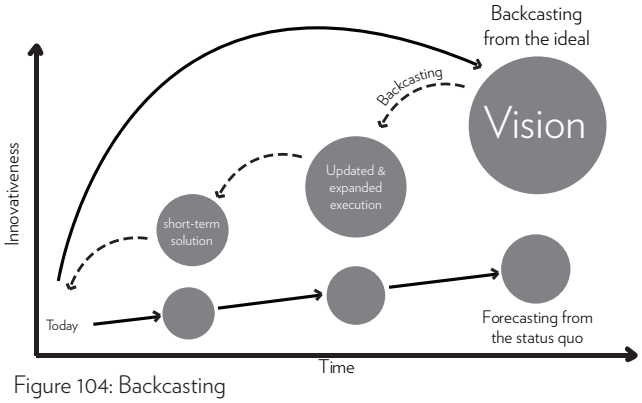


Figure 104: Backcasting

The vision can be broken down into 'strategic pillars' which basically are the main pillars for innovations to build upon. At Ecobloom, the main strategic pillars are 'smart, educational, stylish'. More specifically, within all innovations that we will launch, it is important to differentiate ourselves with intelligent technology, an educational element and stylish/Scandinavian design. This also serves as a criteria for choosing which 'effect' to pursue in the second or third horizon. By asking oneself to what degree does it build upon the organization's strategic pillars?

- *Culture, mindset and attitude*

  Next to the vision, values and norms, the intended culture should be established at the start of an organization. However, establishing the right culture is an ongoing activity which requires experimentation. We recognized the importance of an aligned mindset and attitude amongst team members. Allowing room for experimentation and failure to enhance oneself. The culture at Ecobloom empowers team members to continuously grow. For instance, we care about personal development and allocate time for activities like reading and personal goals. To assist personal growth, we have developed a system which aims to motivate team members to reach their personal objectives. It documents progress and the evaluation is performed collaboratively on a biweekly basis. The ambitious culture supports constant growth and aligns nicely with our vision.

The vision, values, norms, culture, mindset and attitude affect many elements, as displyed in figure 105. For instance, it influences the type of leadership and management, the types of organizations to partner up with and the goal setting. Furthermore, it serves as assessment criteria in the recruitment process. More precisely, the established vision must resonate with the new team members.

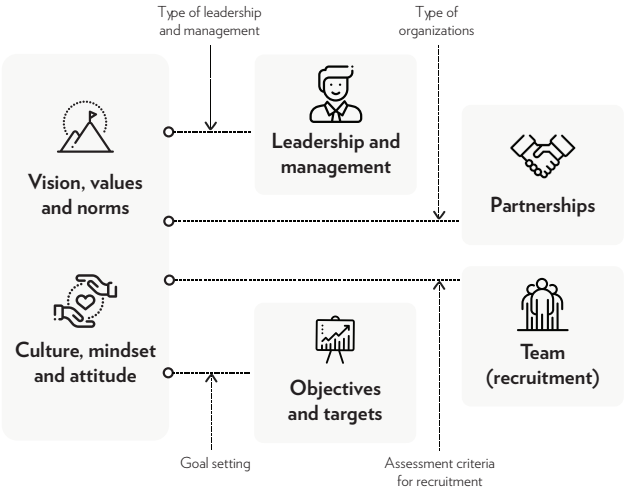


Figure 105: Foundational layer influencing other elements

The company culture we aim to establish is reflected by the office space in which we work. Epicenter Stockholm has a big, open, flexible atmosphere where many start-ups and scale-ups are situated. Many innovative ideas are being developed and this is reflected by the environment.

Roles & responsibilities

To maintain focus and efficient workflows, dividing the roles and responsibilities early on in the process can help enormously. At Ecobloom this has been an ongoing and iterative process, where we experiment with assigning roles and responsibilities. Although areas of focus have been appointed, as co-founders we still wear many hats, because the environment is dynamic and chaotic.

As figure 106 shows, processes and systems can be implemented to optimally fulfil the roles and responsibilities. The greatest changes in roles and responsibilities occurred when new team members were recruited. The responsibility shifted from our own tasks to the progress of three new recruits as well. Having proper processes and systems implemented, enabled us to responsibly manage and support the new team members.

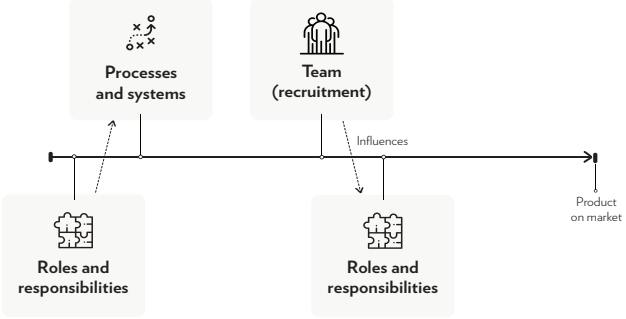


Figure 106: Roles and responsibilities

- *Processes and systems*
  One of the main contributors to professionalize Ecobloom has been the implementation of processes and systems. It helps working focused and provides much support in a highly dynamic and chaotic environment. This section highlights the most important ones.

  - System for constant exploration
  To continuously analyze the external environment and explore, various systems have been implemented. For instance, figure 107 illustrates the exploration framework focused on technological developments and competitor products with strategic relevance to Ecobloom. It reviews mainly strong signals on the technology scouting framework (Brenner, 1996). Frequently used sources to acquire the latest technological developments and products are for instance: Kickstarter, Indiegogo, Fastcompany, Wired, Techcrunch, Mashable, Forbes, The Verge.

  Hereafter, products are plotted on a graphical representation of the competitive field and documented with relevant variables, e.g. company, USP, consumer segment, trends, price. This way, all new developments with strategic relevance to Ecobloom are mapped in a shared document where all members can examine and add products. These products are related to the Ecobloom's SWOT, to analyze whether a threat or opportunity arises. Last, parts of the strategic issue management (SIM) method are adapted (Ansoff, 1980). The idea here is to determine the impact and urgency of new developments derived from the SWOT. Followed by an issue assignment, in which an organization decides to take no action, delayed action, immediate action or only keeps monitoring.

  - Practical systems
  Many practical systems are in place to work efficiently and keep the team aligned. All systems are daily/weekly/monthly updated depending on the priority. Because two team members of Ecobloom work remotely, we consider these tools crucial for communication and alignment.

Moreover, we believe measuring much relevant data early on in the start-up create many benefits in later stages and increases the efficiency of managing. As shown in figure 108, implementing and using tools is a process of trial and error. In our case, we have found the right tools after many iterations and experiments. It is crucial that processes and systems are used early on in the start-up's life, as it significantly enhances the overall performance when leveraged correctly.

Figure 108: Experiment with systems

- To keep track of everyone's tasks and progress, an online task system called 'Asana' is utilized. It views how much time is spent on tasks and reports overall progress.
- To manage time more effectively, a management system called 'Toggl' is used. It creates weekly reports about when and how much time is spent on what tasks. These reports are internally evaluated and decisions concerning time allocation are made in a data-driven way.
- To share knowledge and communicate about specific topics, several 'Slack' channels are used on a daily base.
- 'Skype' is the software that is being used for meetings with the entire team. Weekly Skype meetings about 'have done's, will do's', and general thoughts are performed.
- Mailchimp is utilized as email software to reach out to the hundreds of subscribers simultaneously.

- Overall processes
The processes in which the overall product development occurs, consists of the Lean Start-up, Design Thinking and elements of Agile/scrum (as mentioned in the chapter 'project approach'). By working with short iterations and quick product validation, we are able to proceed rapidly with little resources. Being in constant communication with different consumer segments allows us to optimize the product's desirability.

Example exploration system implemented by Ecobloom
Focus on technology

Updated: 2x Weekly
Discussed within team: Biweekly
Frequently used sources: Kickstarter, Indiegogo, Fastcompany, Wired, Techcrunch, Mashable, etc.

Decision making:
High urgency, major impact: Board
Significant urgency, significant impact: Board
Low urgency, low impact: CSO

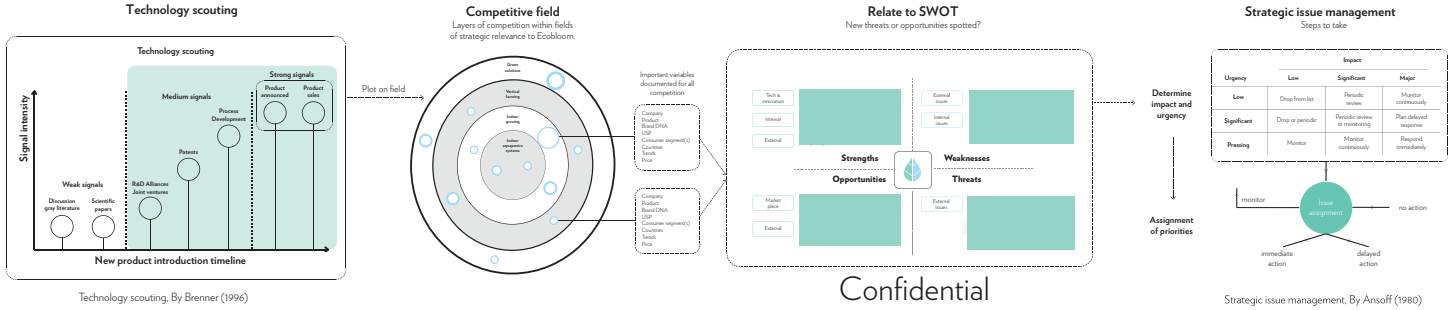


Figure 107: Exploration system (technology focus)

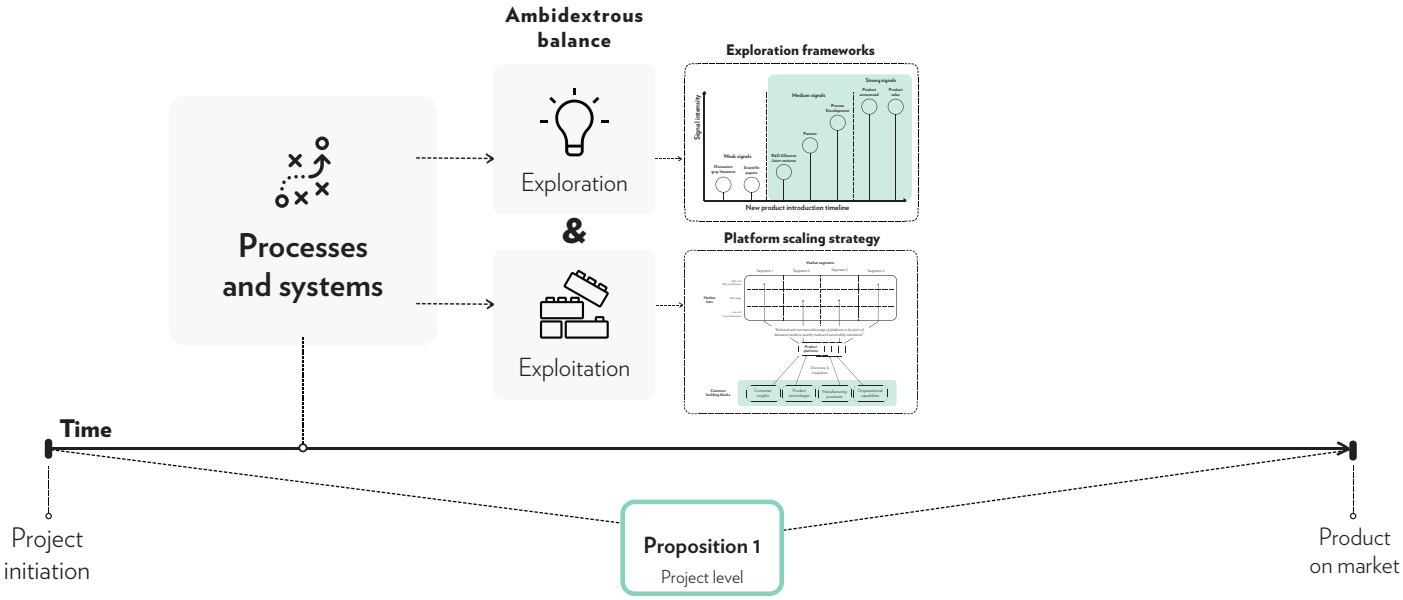


Figure 109: Processes and systems as ambidextrous enablers

Product platform strategy

A process aimed at scaling by exploitation is the product platform strategy. By designing a product in a modular way, derivative products could be easily derived and successfully introduced separately. Ecobloom's proposition is very well suitable for a vertical scaling, combined with a horizontal platform strategy. This opportunity is displayed in figure 110. At the moment of the thesis' execution, the new derivative product ideas were assessed on market potential with parts of the proposition framework.

Exploiting current knowledge and establishing a product platform influences the development process. For instance, components needed to be designed modular. This slightly affected the development time and complexity. However, the derived products can generate much extra revenue without substantial investments in resources to develop and introduce them. Concluding, the processes and systems we have implemented allow us to explore (explore framework) and exploit (product platform strategy).

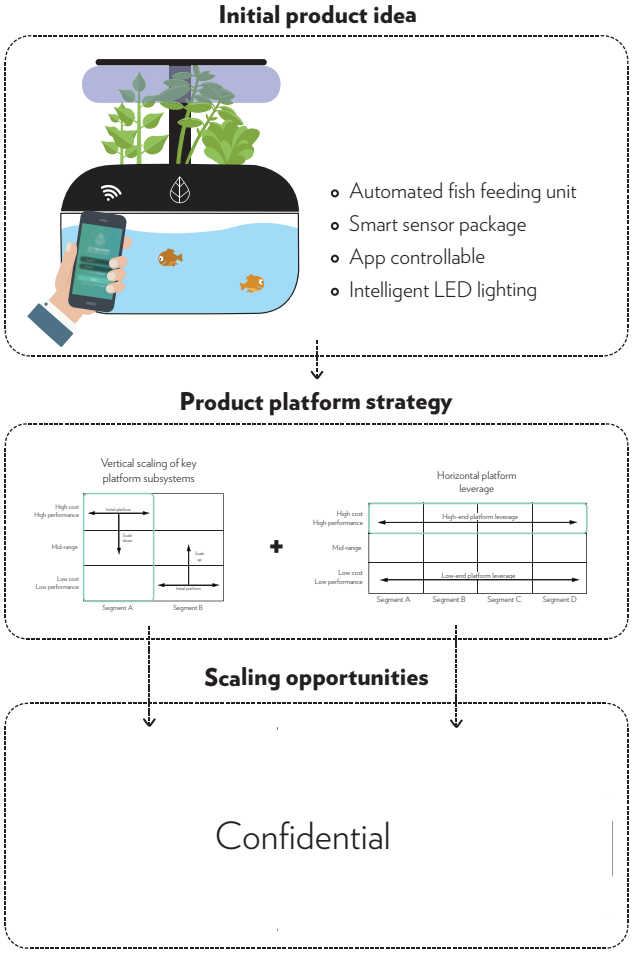


Figure 110: Implemented product platform strategy

- *Objectives and targets*
  Once the working processes are structured and all the practical systems are in place to measure and track data, objectives and targets can be formed (figure 111). To ensure the accuracy and effectivity of the tools, it is important that updating the systems becomes a habit.

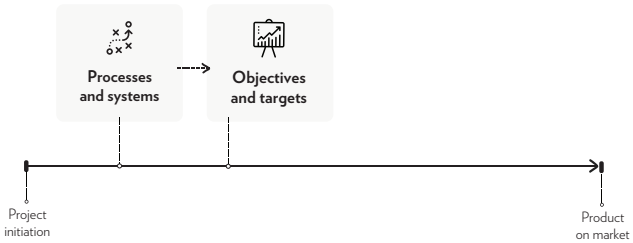


Figure 111: Interaction effect

At Ecobloom, personal development is a top priority. Therefore, objectives and targets are constantly assigned to keep improving ourselves. During the weekly meetings we discuss the progress and on a monthly base everything is evaluated and new targets are set. Setting targets not only helps in challenging oneself, but also trains planning skills and enhances estimations. Currently targets are set for reaching out to journalists/bloggers to be featured in articles to expand the community. Obviously, the targets need to be aligned with the overall priorities within the development process.

- *Network and community*
  Another ongoing activity is establishing a strong network that is being expanded constantly. Scaling fast requires a vast network of potential investors, consumers, experts, opinion leaders and so forth. This is done by online as well as offline efforts. The community of interested people is not only the initial consumer base, but it can also be leveraged for e.g. product feedback. At Ecobloom, we have intensified the time being spend on community building after determining the date for the Kickstarter campaign launch. As the case study learnings on page 66 point out, the amount of approximate email subscribers needed, can be calculated by the Kickstarter pledge goal and the marketing budget. The Kickstarter campaign date has been postponed twice, because we started collecting email addresses too late. Therefore, our advice is to start collecting email sign-ups as soon as there is a landing page or website live.

  Currently, the Ecobloom community is expanding every day. On a daily base, digital advertisements run and on a monthly base, fairs/events are attended. The email subscription list and social media follower base are considered the most important communities. The subscribers and followers are constantly engaged by new updates about the EcoGarden and other information. A strategic 'content calendar' helps to create an overview in which all the posts and updates are planned. This way, we know when and what type of content to create.

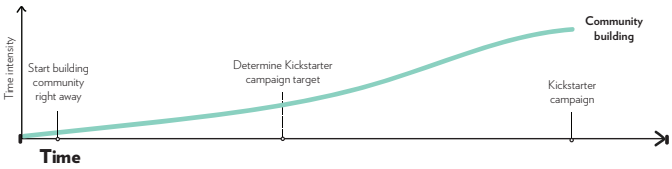


Figure 112: Community building intensity

To expand the network and community further, we aim to leverage digital channels of opinion leaders. Potential collaborators are categorized and could possibly write an article about us. Organizations that we approach fall in one of the following categories:
- Gadgets
- Cooking
- Green design
- Interior design
- Industrial design
- Home and lifestyle
- Media and entertainment
- Innovative products & technology

All relevant organizations are grouped into one of these categories and reached out to with a different message, emphasizing different attributes and benefits of the product. Using this method, we have managed to be published in many articles, which gives us the opportunity to display more references on the website homepage and expose the brand. This exposure, in turn, grows the online community. Figure 114 shows the current social media community, where Instagram and Facebook are utilized most.

Figure 113: Some organizations that mentioned Ecobloom in an article

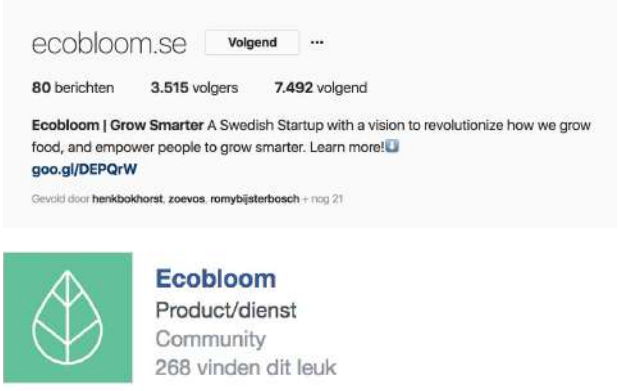


Figure 114: Instagram and Facebook communities

- *Team (recruitment)*

Recruiting new team members could be done for various reasons. At Ecobloom, we have recruited three engineers with different backgrounds to acquire knowledge in UI/UX and back-end development, but also product development. Employing a multidisciplinary team has greatly enhanced the speed of product development and creates a better ambidextrous balance.

To work on the bigger picture more frequently and distance ourselves more from exploitation, we needed engineers that could take over specific tasks In turn, Hamza and I were able to work on strategizing and branding Ecobloom and partly develop the next innovations to come (exploration). This outsourcing of tasks is a strategic consideration, allowing us to focus more on future innovations. Thereby, balancing exploitation and exploration better.

Professionalizing

Before recruiting talented engineers and developers, we needed to professionalize Ecobloom. Therefore, partnerships were initiated as a method of gaining credibility. A well-established Swedish design retail store was interested in partnering up. Now our website viewed RedBull basement, Epicenter Stockholm and the design retail store as references, which are three very well-known organizations in Sweden. The design retail store has been utilized for several photoshoots to enhance the website's appearance significantly with product pictures. Many applications were received through a digital recruitment hub and the application process started. Besides skills and knowledge, the main recruitment assessment has been their vision, values, norms, mindset and attitude.

Emese
UX/UI Designer

Alvaro
Telecommunication engineer

Nathan
App developer

Figure 115: First team expansion

Emese, Alvaro and Nathan (figure 115) joined the team mainly to develop the mobile application and back-end of the system. On the long-term they will be involved in the development of future innovations. Coaching and guiding have suddenly become daily/weekly tasks next to setting objectives and milestones collaboratively.

Many interaction effects with different variables come into play when expanding the team. Figure 116 shows the most important links and findings. Before recruiting, processes and systems were developed and implemented to professionalize the work flow. Second, partnerships were established to gain credibility. After three new engineers were recruited, the roles and responsibilities were influenced. Moreover, knowledge and expertise was gained that needed to be utilized efficiently. More aspects were influenced by the team expansion, like the overall communication, meetings and general team dynamics.

Figure 116: Team expansion and interaction effects

- *Resources*

Ecobloom follows a plan that takes into account a holistic perspective of all the required activities towards the market introduction and how much resources (time, knowledge, money) everything approximately requires. Knowledge and money are mapped on a roadmap, thereby creating a clear overview of how to achieve market introduction within the dimension of time.

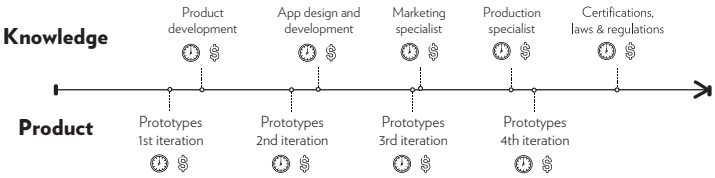


Figure 117: Summarized resources map

To expand monetary resources, we constantly apply to relevant funds, subsidies and competitions, many of which successful. In the end of August, our Kickstarter campaign will be launched to acquire enough budget to start production in October. Funding where investors take a stake in the company is intentionally kept on hold. It is important to maximize the traction and impact before closing such a deal. Within bringing the first product to market, Kickstarter is considered the greatest source of initial investment to start production.

Kickstarter

Preparation should be started at least 3-4 months before launching the campaign. We have conducted an extensive analysis of 20 similar campaigns that either succeeded of failed. Many variables were analyzed in order to explain to some extent where the success/ failure came from. For instance, the reward strategies, partners, references, structure of the video, problem definition, rewards and so forth. Crowdfunding in general is explored in appendix 1.

- *Partnerships*

  Partnerships can take many different forms. It is important to understand partnerships generally rest on a win-win construction. Partnerships are being established throughout the entire process with different purposes. Below are the most important partnerships described with their purpose and timing in the process.

1. Partnerships are established with the Chinese manufacturers to co-design the EcoGarden. Thereby leveraging their knowledge and expertise in the field of efficient production. Involving the manufacturer in the design process brings several benefits (e.g. it might generate new insights, increase innovativeness). This is a partnership on a technical level.

2. A well-established Swedish interior design store will have the first rights to sell our product through their channels for the first few months. This partnership leverages their well developed brand equity and resources. For instance, photoshoots have taken place in their studio's and apartments with their equipment and photographers. This photoshoot took place exactly at the time we needed to professionalize our image and gain credibility for the recruitment process. Furthermore, we enhance the innovation adoption by utilizing these offline channels.

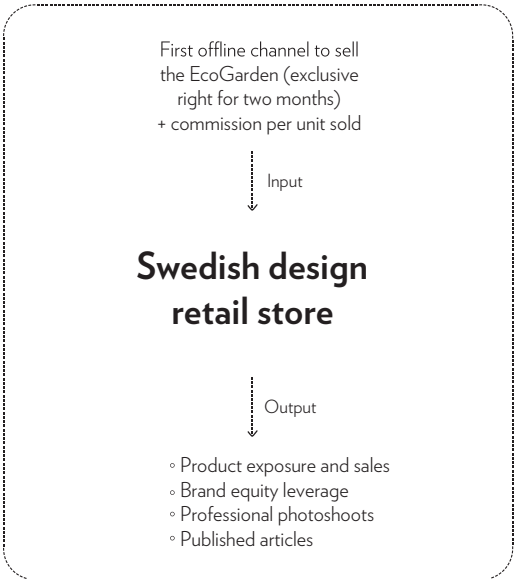


Figure 118: Partnership retail store

3. Sweden Foodtech is our partner and provides us with a stand at several fairs/events. It gives us the opportunity to expose the brand and product to thousands of people. It's a great activity to expand the network and meet potential consumers, partners and investors. Within the overall development process, four fairs of several days took place over a three month period. The time had been strategically chosen after the first working prototypes arrived.

Figure 120: Attending fairs and events

4. Our partner RedBull helps building the brand in many ways. After winning the RedBull basement competition, they provided us with a 9-month membership at the 'Google for entrepeneurs' area within Epicenter Stockholm. Moreover, their professional camera operators help filming and editing scenes for the Kickstarter video.

5. Several innovation hubs support us with knowledge and exposure to financial resources. Multiple funding rounds have been acquired through KTH Innovation to realize the batches of prototypes.

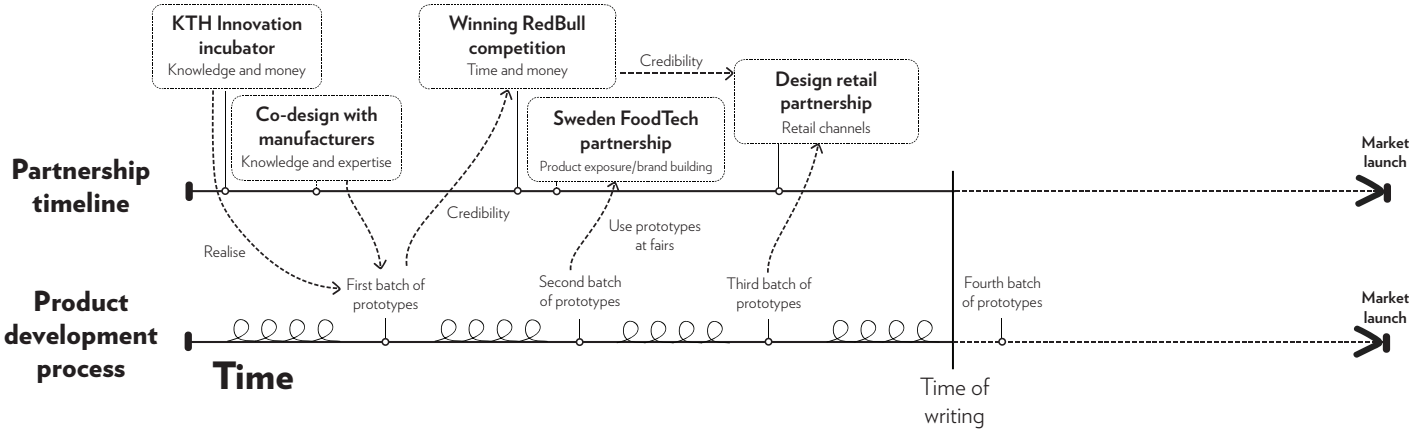


Figure 119: Partnerships over time

An important learning from figure 119 is that credibility creates traction and causes a domino effect to increase the traction further. For instance, funding from KTH Innovation and co-designing with the manufacturer enabled us to order the first batch of high quality prototypes. This gave us enough credibility and momentum to win the RedBull basement competition out of 70 participating start-ups. This, in turn, established enough credibility to partner up with the highly appreciated DesignTorget. The second batch of prototypes created much enthusiasm among the founders of Sweden Foodtech, who wanted to host us on all of their events. Credibility and professionalism are key in the pursuit of valuable partnerships. Lastly, these partnerships are mainly established to acquire resources, utilize knowledge and expertise and expand the network and community (figure 121).

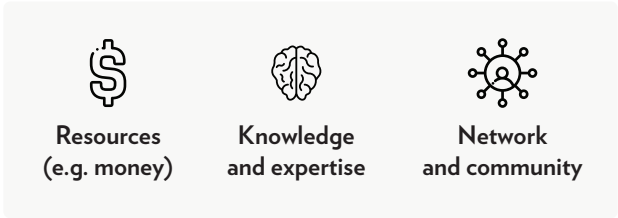


Figure 121: The main influenced factors by partnerships

- *Knowledge and expertise*

  To acquire knowledge and expertise throughout the product development process, several methods were employed. As mentioned before, figure 123 shows our simplified knowledge roadmap. It points out at what times within the product development process certain knowledge is required. It can be acquired on a consultancy base or through recruiting new team members.

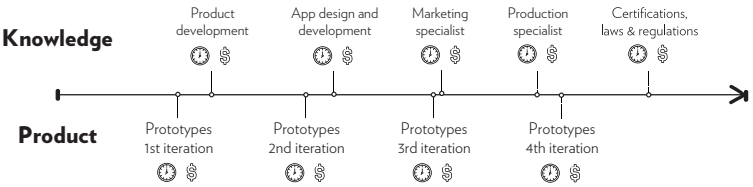


Figure 123: Simplified knowledge roadmap

Because our team is multidisciplinary, much can be achieved with internal skills. However, specialists were consulted for marketing, production and laws and regulations. Resources were allocated for these consultations a long time before they actually took place, because they were taken into account on our knowledge roadmap.

Figure 122: EcoGarden exposed at the Swedish design retailer

- *Leadership and management style*
  A visionary leadership style with clear direction for the future is employed. The vision is communicated through vision concepts to align the team and work towards a common understood goal. The management style rests on collaborative evaluation of task performance. We permit all team members to experiment and reach the objectives at his/her own way, but as co-founders we give advice about methods and processes that can be applied. This freedom works well, because all team members are self-organized and responsible. The leadership and management style are part of establishing the intended company culture.

- *Investors*
  The idea with investors had been to contact them throughout the product development process to build an initial network, but to postpone closing a deal until we created much traction. Therefore, we aimed to wait until after the Kickstarter with taking on an investment party or angel investor. Expert interviews point out this could be a risky strategy, since the success of the Kickstarter campaign greatly determines the worth of the start-up in that case. Also, the knowledge, network and resources that investors can provide, are useful to leverage much earlier in the start-ups' life. A thoughtful strategy concerning investors must be established early on in the development process.

Throughout the product development process, the pitch deck is continuously updated with the newest pictures and findings. Iteratively enhancing and updating the pitch deck is beneficial in many ways. First, we enable ourselves to quickly participate in many start-up competitions. Second, applying for various funds and subsidies becomes easier and more successful. Third, investor meetings can be arranged on short notice. Last, it helps us to improve the definition of the problems, solutions and overall story.

Figure 124: Hamza and I pitching at different events

7 | Conclusion & discussion

These next chapter elaborate on the overall conclusion and discussion of the report. First, this section describes the academic and entrepreneurial contribution of the thesis and the obtained benefits for Ecobloom. Hereafter, the research objectives are evaluated upon.

Academic and entrepreneurial contribution

The frameworks are displayed in the report as linear processes. However, they are deeply intertwined with many parallel processes that all generate interaction effects. This interaction between many different parallel processes makes start-up growth complex and hard to grasp. Not to mention countless contextual variables that play a vital role in start-up scaling. This complexity and context dependent nature increases the difficulty to abstract and generalize knowledge.

As mentioned before, literature lacks an integrated framework which combines the scaling-up of a proposition and organization in one coherent whole. The frameworks build upon understanding that has been created by literature research, expert interviews and the case-study of Ecobloom. It takes abstract elements from management and business literature and merges it with concrete and practical knowledge and experience from experts in the fields and ourselves. Thereby enriching existing knowledge and contributing insights to both researchers and entrepreneurs. In addition, several new and useful methods were developed to suit the entrepreneurial context. For instance, online Facebook laddering was used and provided tremendous benefits during the consumer research phase. Moreover, reversing the STP method by Kotler (1988) to PTS (positioning - targeting - segmentation) is a new and valuable approach as well. Last, the innovation adoption assessment framework could be directly utilized (or slightly altered) to generate insights about the stimuli and proposition.

From an entrepreneurial perspective the report is valuable, because of its concrete components and hands-on tools to implement and experiment with. The frameworks are specifically tailored to fit the context in which entrepreneurs operate. Although parts of the framework are particularly strong for start-ups with a (tech) hardware proposition, the end result contains many generalized elements which are directly implementable for start-ups that operate in different fields.

Benefits for Ecobloom

Ecobloom has enjoyed substantial growth in the graduation period. First, processes and structures were developed to implement and validate the findings of the organizational framework. This has resulted in a significant enhancement of professionalizing the start-up and preparing it for further growth. By seeing the bigger picture and balancing exploration/exploitation, Ecobloom has designed second and third horizon propositions which are currently being part-time developed. Next, the team has expanded from three co-founders to a more multidisciplinary team, currently consisting of six engineers (including co-founders) with a different background. Also, derivative products are developed and currently tested on market potential, as a result of the proposed product platform strategy. This enables Ecobloom to tap into various other consumer segments with derivative products which are based on the building blocks that have been created while developing the first proposition. Concluding, implementing the innovation practices and guidelines from the framework has lead to Ecobloom being more future proof.

The optimal growth strategy for the proposition has been developed which takes into account constraint resources (time and money) and enables Ecobloom to grow with a hybrid marketing strategy. Furthermore, Ecobloom has grown its network and increased the exposure tremendously by attending many fairs and pitches. Currently over 500 people have subscribed to our emailing list and this number is rapidly increasing every day. Furthermore, the product development is currently 85% done and (parts of) the system have gone through several optimization iterations. The production processes have been optimized by designing for assembly practices. Also, the aesthetic appearance and many details have been improved. Last, the lamp and feeder currently have a proof of concept and production and assembly plan.

Many preparations to succeed the Kickstarter campaign have been undertaken. Initially the plan was to launch the campaign in the beginning of June, but after doing much research we came to realize it takes more preparation and work to achieve the desired end result. Therefore, it has been postponed till the end of August.

Research objectives

Objective 1a. Create an organizational framework that supports growth.

This objective is foundational to the overall created strategic framework. It aims to address both the project level and a company level. The short-term 'project-level' framework analyzes and combines the most crucial elements during a start-up's early stages. Whereas the company level aspires long-term growth by establishing future-oriented practices. Next to Ecobloom's implementation, the frameworks have been evaluated with experts to improve the validity.

Objective 1b. Create a framework for Ecobloom to rapidly scale-up their proposition.

To achieve this research objective, it was split in two sub-parts which both contribute to the definition of the second framework. Objective 1bi is start-up specific and takes a critical look at the current consumer perception of 'aquaponics'. The second objective looks at innovation adoption from a consumer behavior perspective. Furthermore, the framework enables a start-up to scale the proposition in a validated and rational manner.

1bi: Create an understanding of the current consumer perception of 'aquaponics'.

Early on during the thesis, the perception of aquaponics was explored in literature. In addition, by performing many interviews the category knowledge was assessed. The consequences of the low product category knowledge were taken into account during the development of the proposition framework. By communicating the value of the product in different ways and consistently explaining the principle of aquaponics on landing pages, this objective has contributed the research objective 1b.

1bii. Positively influence the innovation perception and adoption intention.

In order to positively influence the perception and improve the adoption intention, the framework takes into consideration important fields of research. More specifically: categorization, innovation adoption, market segmentation and positioning. This contributes to the overall objective of rapidly scaling-up a proposition by influencing the perception, and consequently the adoption intention. The framework and landing page templates enable start-ups to tailor their marketing message to specific consumer segments.

However, the digital communication did not always work optimally, especially for the early majority and late majority.

Therefore, a hybrid marketing strategy was designed to optimize the innovation adoption utilizing on- and offline channels. Figure 125 visualizes this approach and maps the marketing intensity over time. The next section explains the idea more in depth.

- Hybrid marketing strategy for proposition growth

After many online experiments we realized that not all consumer segments could be effectively conversed through digital channels, despite the effort of tailoring the marketing messages. This has lead to the insight of prioritizing the consumer segments and to develop a strategy which incorporates offline exposure parallel to the online focus.

Digital channels work well for the innovators and early adopters, as described by Moore (2014). The experiments point out that digital is not the right channel for the (early) majority. Observability and trialability are very important innovation adoption issues here. Ecobloom's implementation points out that an offline marketing strategy works effectively to address the early majority. Partnerships have been established with fairs, stores and events to gain exposure and create traction in the less innovative consumer segments. The well-known food festival 'Taste of Stockholm' with many curious visitors collected over 130 sign-ups in one week. The set-up of the fair stand is shown in figure 126. The banner communicated a benefit-based message without a category label.

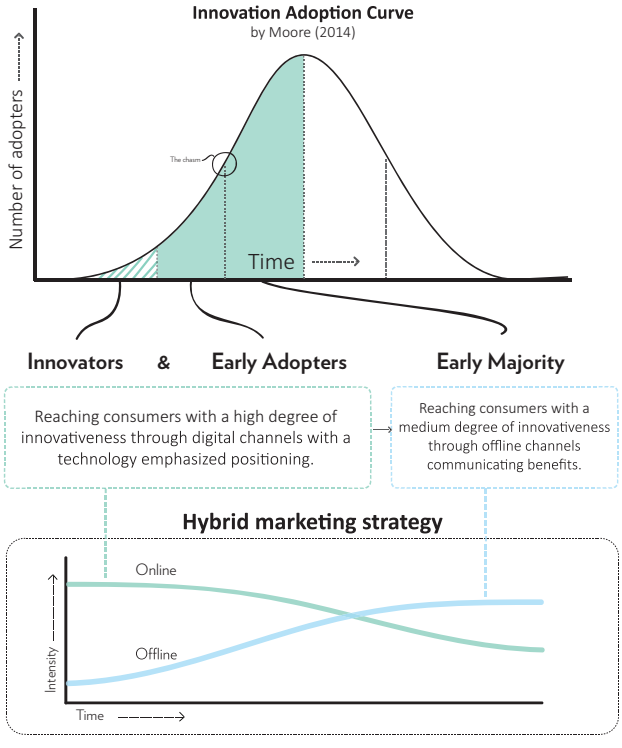


Figure 125: Hybrid marketing strategy

Concluding, a hybrid marketing strategy should be employed and is highly effective in scaling -up a start-up in its early stages. By mainly targeting the innovative adoption groups online, traction and hype is created around the crowdfunding campaign (Kickstarter). While at the same time utilizing events and fairs to create offline awareness, expanding the initial consumer base. This combination is powerful in many ways and addresses several consumer segments simultaneously.

Figure 126: 'Taste of Stockholm' fair set-up

Objective 1c. Demonstrate the framework's validity with Ecobloom.

Ecobloom has used and evaluated upon the initial framework proposals. The proposition framework has been validated and enhanced iteratively by Ecobloom's implementation. It has shown high effectiveness for the product of Ecobloom. However, certain elements are specifically strong for ambiguously categorized or hybrid products (e.g. laddering interviews, tailored marketing message). Therefore, the validity of the proposition framework has been demonstrated for start-ups that offer a specific type of product. The effectiveness of the implementation might differ per type of start-up. The organizational framework was split into two parts in order to better understand the long-term company level and the more short-term project level. As mentioned before, expert interviews were conducted in order to justify the validity of the framework.

1. Support start-ups in the process of rapid scaling up.

These sub research objectives have lead to the main objective of supporting start-ups to scale up rapidly. By taking into account the proposition of a start-up, parallel to organizational related aspects, on the short- and long-term, start-ups are offered relevant frameworks and guidelines to thrive.

Usability and applicability

The process and framework is specifically strong for the product of Ecobloom, which is mapped on the 'diversification' quadrant in the Ansoff growth matrix (Ansoff, 1957) (figure 127). It is a new product for a new market, therefore the market segmentation and positioning play a crucial role and are extensively managed in the framework. In addition, as Jeremiah Gartner (2014) nicely defines start-ups: *"A company that is confused about: what its product is, who its customers are and how to make money."* This is especially true for start-ups offering a diversified product, like Ecobloom. The proposition framework is especially powerful in identifying what the product is exactly and who the customers are. Start-ups offering products of the other three quadrants might perform the consumer research and segmentation/positioning phases less extensive.

Ansoff growth matrix

		Products	
		Existing	New
Markets	Existing	Market Penetration	Product Development
	New	Market Development	Diversification

Figure 127: Diversification, by Ansoff (1957)

Although the organizational framework is aimed to be general, it is synchronized with the development of tech hardware. This might decrease the applicability for start-ups offering a service or other types of hardware.

Effectiveness

A critical assumption made in the report is that start-ups are able to perform the steps in the process adequately. For instance, the framework assumes that start-ups are able to translate external trends and a changing future landscape into viable, desirable and feasible concepts. However, not every start-up has the strategic capabilities to make this complex translation. Moreover, the effectiveness of e.g. the online advertisements and landing pages heavily depend on the execution and the performance of start-up team members (e.g. the translation from research data to stimuli depends on the skills of the designer.)Therefore, the importance of having a multidisciplinary team that is capable of performing (all) steps of the frameworks should be stressed. Otherwise, external skills and knowledge should be acquired. The performance of Ecobloom can be used as guidelines for start-ups.

8 | Recommendations & limitations

This chapter provides recommendations, suggestions for further research and addressess the limitations.

Recommendations

Timing

The frameworks were developed after Ecobloom's product development was done for approximately 60%. Hereafter, they were implemented and tested to define the strategy. However, other start-ups can execute the proposition framework much earlier in the product development process. The insights that the process generates, can contribute significantly to the product and strategy development. Moreover, it helps to build a community and consumer base early on in the development process. The organizational frameworks are recommended to implement at the start. Although many elements mentioned in the short-term framework are implicitly and naturally established by start-ups. It can help to explicitly develop a fitting strategy that takes into account interaction effects between the elements.

Marketing strategy

When launching a relatively radical innovation, it is wise to employ the hybrid marketing strategy as proposed in the conclusion. Innovators and early adopters can be reached and engaged through digital channels, whereas the early majority is targeted through relevant fairs and events. This early majority is fundamental to obtain considerable growth and profit (Moore, 2014). However, when launching a more incremental product, the effectiveness of the digital strategy targeting the early majority remains unclear. Future research could look into the effectiveness of a digital marketing strategy to target the early majority with an incremental innovation.

The online social media experiments for several consumer segments (e.g. aquarists, indoor growers, young families) ran approximately for one week with different advertisement set-ups. These experiments could have been executed longer than one week to find a sweet spot that could potentially pass the stage gate criteria. However, due to time constraints we moved on and focused relatively quickly on the Kickstarter audience through the digital channels. While addressing the less innovative consumers simultaneously, but offline. Start-ups that have more time available might perform the initial experiments for longer than one week.

Ambidextrous balance

The amount of time spent on practices mentioned in the long-term organizational framework influences the ambidextrous balance of a start-up. In order to translate the external environment, future landscape and internal capabilities to viable, desirable and feasible propositions, time need to be spend continuously on exploration and ideation. The recommended processes and systems are examples of easy implementable tools. Personal experience points out that 2-4 hours per week and occasional brainstorm sessions are sufficient to keep up with most of the relevant developments in the rapidly changing business environment.

The ideation and development of new propositions should start already during the development of the first proposition. How much resources should be allocated to this activity, depends on the available resources and start-up itself. Having a set of effects for future landscapes provides insight into what existing capabilities can be leveraged to realize them and what still needs to be acquired. In the case of Ecobloom, halfway during the development of the EcoGarden several ideas for future effects were established which are partly realizable with the means. Therefore, we are building and advancing the internal capabilities in order to be able to actually construct the next effects.

Next, effective exploitation of current knowledge and business is also top priority for start-ups. The thesis presents a nimble approach to exploit, namely developing a product platform strategy and leveraging the existing building blocks of the start-up. Another approach not extensively mentioned in the report is the active search for potentially relevant consumer segments. For instance, we have actively looked into B2B opportunities, selling the EcoGardens to cafes, schools and offices. Mainly for educational and sustainability purposes, but also for image/status related motivations.

Future research could look into the ambidextrous balance within start-ups more in-depth. For instance: How does an (un)healthy balance affect the short-term and long-term performance of a start-up? To what extent should start-ups explore with scarce resources? Current literature on ambidexterity mainly focuses on large, established organizations. However, interesting research opportunities lie at start-up ambidexterity.

Limitations

The frameworks are limited to the implementation of only one start-up, Ecobloom. The validity and applicability of the frameworks should be tested in different contexts, by different types of start-ups. For instance, start-ups offering propositions within the other three quadrants of the Ansoff growth matrix. Also, it could be interesting to assess the performance of the frameworks implemented by start-ups developing their second or third proposition. These start-ups are more familiar with the practices mentioned in the report and could potentially enrich the frameworks and contribute knowledge.

The constant battle between resources (time and money) and quantity/validity of the research process poses some challenges in the execution of the proposition framework. No guidelines are provided on how much research is necessary exactly or how long specific parts of the process should take. Because of the context dependent nature and messiness of the entrepreneurial world, no accurate estimates can be provided. Executing the proposition framework approximately took two months in the case of Ecobloom, because its development and implementation depended greatly on the graduation period of six months total. However, it could be done faster and less extensive, or more lengthy/detailed. The influence of the process' length on the overall rate of the innovation adoption remains ambiguous.

Much of the findings are based on knowledge either acquired from literature, expert interviews and the case study. However, another interesting source of knowledge which could have been included more intensively, is the approach of other start-ups to grow. This could increase the comparability and generalizability of the thesis' results. Also, it can provide multiple approaches and strategies for start-ups to consider and employ. Thus, future research could examine the approach of many start-ups in different field to create an overview of other relevant growth strategies and their applicability within various contexts.

Another limitation of the thesis is that Ecobloom consists of 6 engineers with different backgrounds. Therefore, much knowledge exists internal and crucial activities are performed by one of the team members. This allows Ecobloom to postpone the investor funding to create as much traction before closing a deal. The multidisciplinary team with diverse skillsets provides a great advantage and is leveraged optimally. However, this is often not the case within start-ups and it might affect the representability. Future research could look into the implementation of start-ups with significantly less internal capabilities.

The long-term organizational framework has been partly validated by Ecobloom's implementation and expert interviews. However, its long-term effectiveness are not proven by actual results, because of the limited time. Therefore, a limitation is that some actions mentioned in this framework are based on theoretical assumptions and expert knowledge, but not backed up by actual outcomes. Future research could perform long-term case studies in which the performance of start-ups that have implemented the frameworks is assessed over a 1 or 2 year time period.

Location and external factors

One very important consideration that is not extensively touched upon is the start-up's location and its overall influence on all the elements mentioned in the organizational framework. For instance, the location might greatly influence the network, partnerships, investors, initial consumer base and so forth. Future research could look into the location of start-ups and how it affects their overall development and growth. However, this has not been included in the thesis because it is out of scope. In the case of Ecobloom, Stockholm was carefully determined as home base. It offers great possibilities for start-ups to partner up with investors and organizations, attend fairs/events and receive funds.

Reflection

The graduation period has been an incredible learning experience, on a professional but also personal level. The process showed me the complexity of bringing a hardware product to market. Mainly the interdependencies between many processes and variables is what created much chaos and complexity. However, I look back on a learning curve which has never been so steep before. It has been challenging, yet very rewarding. This section highlights the most important findings of my personal reflection.

If I look back at the process, I realize that one of the greatest difficulty has been the interdependencies between many variables and processes, as mentioned in this chapter introduction. As co-founders we all had responsibilities in several areas which progress needed to comply with the progress of each other. Running a start-up and simultaneously writing the thesis, developing the product, create and prepare the Kickstarter campaign, attend meetings, fairs, perform interviews, user tests and so forth takes its toll. Working at least 80 hours per week affects physical as well as mental health. Therefore, I developed efficient working processes and structures to perform well and enhance my work-life balance. For instance, I started to implement many tools to; track my time (Toggl), gain overview in all tasks at hand (Monday/Asana), and I started planning my weeks and days in blocks of two hours. This way, I managed to create clarity in chaotic times and I could focus on the things I should be spending time on. In the end, time pressure and stress allowed me to develop efficient working processes and structures. But I found out the hard way that I needed them.

Another big struggle was to digest and process the massive amounts of information from interviews, meetings and literature. A pitfall of me is to diverge for too long, which causes my focus to blur. Thereby, losing the big picture and getting lost in all the details. To prevent this from happening, I started synthesizing and designing right after I obtained important information. I have tried to directly link the synthesized information to the research objectives to sharpen the focus during the graduation process. This has helped enormous in the design process which progressed relatively smooth.

The process is shown much more linear than it actually has been. I constantly jumped back and forth between phases to iteratively create the desired end result. The entrepreneurial methods and approaches enabled me to take advantage of the start-up context. However, I do believe that I sometimes did too much research before implementing the findings. One important reason is that the planning needed to align with Hamza's, so we could set-up the experiments together. Sometimes this affected my personal planning, but I knew this could be a consequence of working together in certain phases.

Start-up life goes hand in hand with tight deadlines, which might create tension and irritations in the team. Task prioritization can be important and helps to work collaboratively towards deadlines. Although some tasks had more priority than working on my thesis, completing the thesis nicely was also one of my biggest priorities. These often contradictory situations where I had to balance thesis/non-thesis tasks was a big struggle for me. I solved the problem by working very long hours, but these were not always as effective. To ease tensions and establish a pleasant working environment again, we concluded collaboratively that some deadlines were not realistic, causing many of the tensions. After reconsidering and postponing certain deadlines (e.g. prototypes, Kickstarter campaign) we worked more in harmony and were less stressed. Finding the right balance between challenging, yet reachable deadlines is a constant struggle. At Ecobloom, we slowly start to recognize our potential more and planning becomes easier. Last, by implementing time management systems, we constantly improve the accuracy of our planning and time estimations.

This graduation period has shown me how much discipline, autonomy and proactive behavior it takes to pursue a master's degree and simultaneously run a start-up. On top of that, it all took place in Stockholm, so every coach meeting took place remotely. This challenged my communication and stakeholder involvement skills. Although I managed to arrange valuable feedback sessions through Skype and enhance my work, in my opinion stakeholder involvement is something I can still improve a lot.

I am a strategic and abstract thinker, but also a hands-on doer, which made the thesis perfect for my personal preferences. Ecobloom's implementation of rather abstract frameworks enabled me to make the translation to a concrete and actionable version. Although I'm proud of the final result, from my perfectionistic perspective, there is always enough room for improvement. Also this thesis poses much room for enhancement. However, I truly believe its comprehensive perspective and holistic approach can support start-ups to grow efficiently.

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